

**Material Safety Data Sheet****DEFINE™ DF HERBICIDE**

MSDS Number: 102000006667

MSDS Version 1.2

Revision Date: 06/03/2010

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name DEFINE™ DF HERBICIDE
MSDS Number 102000006667
EPA Registration No. 264-765

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

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)
For Product Information call: 1-866-99BAYER (1-866-992-2937)

SECTION 2. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview Warning! May be fatal if swallowed. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes and clothing.

Physical State granular solid

Appearance tan

Exposure routes Eye contact, Inhalation, Skin contact, Skin Absorption

Immediate Effects

Eye May cause mild irritation to eyes.

Skin May cause slight irritation.

Chronic or Delayed Long-Term This product is not listed as a carcinogen by ACGIH, NTP, IARC or OSHA. However, it may contain crystalline silica (quartz), a substance which has been listed as a carcinogen by ACGIH, NTP and IARC. Crystalline silica is a naturally-occurring mineral component of many sands and clays. Although the carcinogenic potential of crystalline silica in humans is controversial, it must be considered if it is inhaled under excessive exposure conditions. The respirable portion of the silica that may be contained in this product, however, is small, such that inhalation exposure during anticipated conditions of use is minimal.

Medical Conditions Aggravated by Exposure No specific medical conditions are known which may be aggravated by exposure to this product. Pulmonary and respiratory diseases may be aggravated by exposure to respirable crystalline silica.

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average % by Weight</u>
Flufenacet	142459-58-3	60.00
Quartz (Silica, Crystalline)	14808-60-7	0.703
Crystalline quartz (respirable)		

SECTION 4. FIRST AID MEASURES

General	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Eye	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.
Skin	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.
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.
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.
Notes to physician Treatment	Treat symptomatically. There is no specific antidote.

SECTION 5. FIRE FIGHTING MEASURES

Flash point	not applicable
Fire and Explosion Hazards	Accumulation of fine dust may entail the risk of a dust explosion in the presence of air.
Suitable extinguishing media	Water, Carbon dioxide (CO ₂), Dry chemical, Foam

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DEFINE™ DF HERBICIDE**Fire Fighting Instructions**

Evacuate personnel to safe areas. Avoid contact with spilled product or contaminated surfaces. Do not allow run-off from fire fighting to enter drains or water courses. Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Contain the spread of the fire-fighting media.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

Dust Explosion Class

no data available

SECTION 6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces. Do not breathe dust. Use personal protective equipment.

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. Collect and transfer the product into a properly labelled and tightly closed container. Contaminated soil may have to be removed and disposed.

Additional advice

Do not allow product to contact vegetation.

SECTION 7. HANDLING AND STORAGE**Handling procedures**

Handle and open container in a manner as to prevent spillage. Avoid contact with skin, eyes and clothing. 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.

Care should be taken to avoid formation of dust from abraded granules.

Storing Procedures

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.

Work/Hygienic Procedures

Handle in accordance with good industrial hygiene and safety practice. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

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



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Before removing gloves clean them with soap and water. Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash thoroughly and put on clean clothing.

Min/Max Storage Temperatures

Recommended minimum transport/storage temperature: -18 °C / -0 °F
Recommended maximum transport/storage temperature: 38 °C / 100 °F

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection

Follow all label instructions. Train employees in safe use of the product. Do not breathe dust.

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.

Eye/Face Protection

Safety glasses with side-shields

Hand protection

Chemical resistant gloves made of waterproof material such as polyethylene or polyvinyl chloride

Body Protection

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

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.

Exposure Limits

Quartz (Silica, Crystalline)	14808-60-7	ACGIH	TWA	0.025 mg/m3
		NIOSH	REL	0.05 mg/m3
		OSHA Z1A	TWA	0.1 mg/m3
		Z3	TWA	2.4 millions of particles per cubic foot of air
		Z3	TWA	0.1 mg/m3
		Z3	TWA	0.3 mg/m3
		US CA OEL	TWA PEL	0.1 mg/m3
		US CA OEL	TWA PEL	0.3 mg/m3
		TX ESL	ST ESL	1 ug/m3
		TX ESL	ST ESL	1 ug/m3
		TX ESL	AN ESL	0.1 ug/m3
		TX ESL	AN ESL	0.1 ug/m3
		TX ESL	ST ESL	10 ug/m3
		TX ESL	AN ESL	1 ug/m3
Flufenacet	142459-58-3	OES BCS*	TWA	0.1 mg/m3
			TWA	0.47 mg/m3

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	tan
Physical State	granular solid
Bulk density	32 - 36 lb/ft ³
Water solubility	dispersible
Decomposition temperature	no data available

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid	Temperatures above 70 °C.
Incompatibility	Bases
Hazardous Decomposition Products	no data available
Hazardous reactions	Hydrolyses in alkaline medium.
Chemical Stability	Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Only acute toxicity studies have been performed on this product as formulated. The non-acute information pertains to the technical-grade active ingredient, flufenacet.

Acute oral toxicity	male rat: LD50: 1,365 mg/kg
	female rat: LD50: ca. 371 mg/kg
Acute dermal toxicity	rat: LD50: > 5,000 mg/kg



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Acute inhalation toxicity	rat: LC50: > 5.2 mg/l Exposure time: 4 h Determined in the form of dust.
	rat: LC50: > 20.9 mg/l Exposure time: 1 h Extrapolated from the 4 hr LC50. Determined in the form of dust.
Skin irritation	rabbit: slight irritation
Eye irritation	rabbit: Minimally irritating.
Sensitisation	guinea pig: Sensitising
Chronic toxicity	Flufenacet caused liver, kidney, thyroid, eye, and/or brain effects in chronic dietary studies in rats and dogs. In addition, neurological effects were observed in dogs.

Assessment Carcinogenicity

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

ACGIH

Quartz (Silica, Crystalline) 14808-60-7 Group A2

NTP

Crystalline quartz (respirable)

IARC

Quartz (Silica, Crystalline) 14808-60-7 Overall evaluation: 1

OSHA

None.

Reproductive toxicity	REPRODUCTION: Flufenacet was not a reproductive toxicant in a two-generation study in rats. Toxicity in the offspring occurred at doses producing systemic toxicity in parental animals.
	DEVELOPMENTAL TOXICITY: Flufenacet was not a primary developmental toxicant in rats and rabbits. Developmental effects were observed but were considered secondary to maternal toxicity.

Neurotoxicity	Flufenacet caused neurobehavioral effects and/or neuropathological changes in acute subchronic and developmental neurotoxicity screening studies in rats.
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Mutagenicity	Flufenacet was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
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SECTION 12. ECOLOGICAL INFORMATION

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**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. Drift or runoff from treated areas may adversely affect non-target plants.

SECTION 13. DISPOSAL CONSIDERATIONS**General Disposal
Guidance**

Follow advice on product label and/or leaflet. Dispose in accordance with all local, state/provincial and federal regulations.

Container Disposal

Follow advice on product label and/or leaflet. Triple rinse containers. Puncture container to avoid re-use.

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

According to national and international transport regulations this material is not classified as dangerous goods / hazardous material.

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 264-765

US Federal Regulations**TSCA list**

Quartz (Silica, Crystalline) 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

None.

US States Regulatory Reporting**CA Prop65**

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

This product does not contain any substances known to the State of California to cause reproductive harm.



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US State Right-To-Know Ingredients

Quartz (Silica, Crystalline)	14808-60-7	IL, MA
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Canadian Regulations

Canadian Domestic Substance List

Quartz (Silica, Crystalline)	14808-60-7
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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)

Quartz (Silica, Crystalline)	14808-60-7
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SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):

Health - 2	Flammability - 1	Reactivity - 1	Others - none
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0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Updated for general editorial purposes. The following sections have been revised: Section 8: Exposure Controls / Personal Protection.

Revision Date: 06/03/2010

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