



Material Safety Data Sheet

DI-SYSTON® 15% GRANULAR SYSTEMIC INSECTICIDE

MSDS Number: 102000007118

MSDS Version 2.0

Revision Date: 10/11/2007

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name DI-SYSTON® 15% GRANULAR SYSTEMIC INSECTICIDE
MSDS Number 102000007118
EPA Registration No. 264-723

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. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Average % by Weight
Disulfoton	298-04-4	15.00
Quartz (Silica, Crystalline)	14808-60-7	7.00

SECTION 3. HAZARDS IDENTIFICATION

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

Emergency Overview Danger! Fatal if swallowed, inhaled or absorbed through the skin. Corrosive - causes irreversible eye damage. Causes skin burns. Do not get in eyes, on skin, or on clothing. Do not breathe dust.

Physical State granular

Appearance grey to tan

Routes of Exposure Inhalation, Ingestion, Eye contact, Skin Absorption, Skin contact

Immediate Effects

Eye Corrosive - causes irreversible eye damage. May be absorbed through the eye and produce symptoms similar to those from ingestion. Do not get in eyes.

Skin Causes burns. Fatal if absorbed through the skin. Do not get in eyes, on skin, or on clothing.

Ingestion Cause nausea, vomiting, diarrhea, abdominal cramps, excess salivation, pinpoint pupils, blurred vision, profuse sweating, muscle spasms. Fatal if swallowed. Do not take internally.

Inhalation May produce symptoms similar to those from ingestion. Fatal if inhaled. Do not breathe dust.



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Chronic or Delayed Long-Term

This product or its components may have target organ effects. This product or its components may have long term (chronic) health effects.

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

Any disease, medication or prior exposure which reduces normal cholinesterase activity may increase susceptibility to the toxic effects of the active ingredient. Allow no further exposure to any cholinesterase inhibitor until full recovery is assured.

No specific medical conditions are known which may be aggravated by exposure to this product. As with all materials which can cause upper respiratory tract irritation, persons with a history of asthma, emphysema, or hyperreactive airways disease may be more susceptible to overexposure. Pulmonary and respiratory diseases may be aggravated by exposure to respirable crystalline silica.

Potential Environmental Effect

Toxic to fish, birds, and other wildlife. Toxic to aquatic invertebrates.

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.



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Notes to Physician

Signs and Symptoms

The following symptoms may occur:
sweating
constriction of pupils
stomach pain
Vomiting
Diarrhoea

Hazards

This product is a cholinesterase inhibiting organophosphorous pesticide.

Treatment

ANTIDOTE: Administer atropine sulfate in large therapeutic doses. Repeat as necessary to the point of tolerance. 2-PAM is also antidotal and may be administered in conjunction with atropine.

The product inhibits cholinesterase resulting in stimulation of the central nervous system, the parasympathetic nervous system, and the somatic motor nerves. Do not give morphine. Watch for pulmonary edema, which may develop in serious cases of poisoning even after 24-48 hours. At first sign of pulmonary edema, the patient should be placed in an oxygen tent and treated symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.

SECTION 5. FIRE FIGHTING MEASURES

Flash point	not applicable
Suitable Extinguishing Media	Water, Dry chemical, Carbon dioxide (CO2), Foam
Fire Fighting Instructions	Keep out of smoke. Fight fire from upwind position. Cool closed containers/tanks exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses. Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.
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.
Additional Advice	Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal. Do not allow product to contact vegetation.



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SECTION 7. HANDLING AND STORAGE

Handling Procedures	Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation. Handle and open container in a manner as to prevent spillage.
Storing Procedures	Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.
Work/Hygienic Procedures	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 clothing.
Min/Max Storage Temperatures	Recommended minimum transport/storage temperature: -18 °C / -0 °F Recommended maximum transport/storage temperature: 38 °C / 100 °F The 30-day storage temperature average must not exceed the recommended maximum.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection	Follow all label instructions. Train employees in safe use of the product. 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	Tightly fitting safety goggles or Safety glasses, in case of increased risk, also a face shield
Hand Protection	Chemical resistant nitrile rubber gloves
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

Disulfoton	298-04-4	ACGIH Form of exposure NIOSH	TWA REL	0.05 mg/m ³ Inhalable fraction and vapor 0.1 mg/m ³
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Quartz (Silica, Crystalline)	14808-60-7	OSHA Z1A US CA OEL ACGIH	TWA TWA PEL TWA	0.1 mg/m3 0.1 mg/m3 0.05 mg/m3
		Form of exposure ACGIH NIC	TWA	Respirable fraction. 0.025 mg/m3
		Form of exposure NIOSH	REL	Respirable fraction. 0.05 mg/m3
		Form of exposure OSHA Z1A	TWA	Respirable dust. 0.1 mg/m3
		Form of exposure Z3	TWA	Respirable dust. 2.4 millions of particles per cubic foot of air
		Form of exposure Remarks		Respirable. The value is calculated from a specified equation using a value of 100%. Values lower than 100% will give higher exposure limits. See regulation for specific equation.
		Z3	TWA	0.1 mg/m3
		Form of exposure Remarks		Respirable. The value is calculated from a specified equation using a value of 100%. Values lower than 100% will give higher exposure limits. See regulation for specific equation.
		Z3	TWA	0.3 mg/m3
		Form of exposure Remarks		Total dust. The value is calculated from a specified equation using a value of 100%. Values lower than 100% will give higher exposure limits. See regulation for specific equation.
		US CA OEL Form of exposure US CA OEL Form of exposure OSHA Z1 Form of exposure OSHA Z1 Form of exposure ACGIH Form of exposure	TWA PEL TWA PEL PEL PEL TWA	0.1 mg/m3 0.3 mg/m3 5 mg/m3 15 mg/m3 0.025 mg/m3
		Form of exposure		Respirable dust.
		Form of exposure		Total dust.
		Form of exposure		Respirable fraction.
		Form of exposure		Total dust.
		Form of exposure		Respirable fraction.



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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	grey to tan
Physical State	granular
pH	4.8 (10 %) aqueous suspension
Bulk Density	43 - 52 lb/ft ³

SECTION 10. STABILITY AND REACTIVITY

Conditions to Avoid	Exposure to moisture. Sustained temperatures above 37.8 °C (100 °F).
Incompatibility	Oxidizing agents Bases
Hazardous Decomposition Products	Thermal decomposition can lead to release of: Sulphur oxides Carbon monoxide toxic gases/vapours
Hazardous Reactions	Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

The sensitization hazard has been bridged from the technical-grade active ingredient, disulfoton. The remaining acute toxicity studies have been performed on the formulated product. The non-acute information pertains to the technical-grade active ingredient.

Acute Oral Toxicity	male rat: LD50: 52 mg/kg female rat: LD50: 14 mg/kg
Acute Dermal Toxicity	male rabbit: LD50: approx. 1,000 mg/kg female rabbit: LD50: > 1,000 mg/kg
Skin Irritation	rabbit: No skin irritation.
Eye Irritation	rabbit: No eye irritation. This product is highly toxic and can be readily absorbed through the mucous membranes of the eye.
Sensitization	guinea pig: Non-sensitizing.



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Chronic Toxicity Disulfoton caused cholinesterase inhibition, eye effects and/or increased mortality in chronic studies in rats and dogs.

Assessment Carcinogenicity

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

ACGIH

Disulfoton	298-04-4	Group A4
Quartz (Silica, Crystalline)	14808-60-7	Group A2

NTP

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

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

OSHA

None.

Reproductive & Developmental Toxicity

REPRODUCTION: Disulfoton was not a primary reproductive toxicant in a two-generation reproduction study in rats. Reproductive effects were observed only at doses that caused systemic toxicity.

DEVELOPMENTAL TOXICITY: Disulfoton was not a primary developmental toxicant in rats and rabbits. Developmental effects were observed at doses that caused maternal toxicity.

Neurotoxicity

Disulfoton did not cause delayed neurotoxicity in hens. In acute and subchronic neurotoxicity screening studies in rats, neurobehavioral effects related to cholinergic toxicity were seen without correlating morphological changes in the neural tissues. Disulfoton caused marginal delays in developmental landmarks at maternally toxic doses in the offspring in a developmental neurotoxicity screening study in rats.

Mutagenicity

Disulfoton is positive in some mutagenicity studies without activation but negative or weakly positive in most with activation. With no carcinogenicity concerns and no reproductive toxicity concerns at relevant dose levels, the mutagenicity concerns are low.

SECTION 12. ECOLOGICAL INFORMATION

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 contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Apply this product as specified on the label.



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SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance	Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Container Disposal	Completely empty container into application equipment, then dispose of empty container in a sanitary landfill, by incineration or by other procedures approved by state/provincial and local authorities. If burned, stay out of smoke.
RCRA Classification	The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.
298-04-4	Disulfoton US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261): P039
298-04-4	Disulfoton US. EPA Resource Conservation and Recovery Act (RCRA) P List of Hazardous Wastes (40 CFR 261.33(e) and 40 CFR 302 [CERCLA]): P039

SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:

UN2783, Organophosphorus Pesticides, Solid, Toxic (Disulfoton) // 6.1 // RQ

IMDG CLASSIFICATION:

UN2783, Organophosphorus Pesticides, Solid, Toxic (Disulfoton 15%) // 6.1 // RQ // Marine Pollutant

FREIGHT CLASSIFICATION:

Insecticides or Fungicides, N.O.I., Poison, Other than gases that are poisonous by inhalation

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 264-723

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

Disulfoton

298-04-4



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

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

US State Right-To-Know Ingredients

Disulfoton	298-04-4	CA, CT, IL, LA, MA, MN, NJ, PA, RI
Quartz (Silica, Crystalline)	14808-60-7	IL, MA, MN, RI

Canadian Regulations

Canadian Domestic Substance List

Quartz (Silica, Crystalline) 14808-60-7

Environmental

CERCLA

Disulfoton 298-04-4 1 lbs

Clean Water Section 307 Priority Pollutants

None.

Safe Drinking Water Act Maximum Contaminant Levels

None.

International Regulations

European Inventory of Existing Commercial Substances (EINECS)

Disulfoton	298-04-4
Quartz (Silica, Crystalline)	14808-60-7

SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):

Health - 2 Flammability - 1 Reactivity - 1 Others - none

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

Reason to Revise: Updated due to new system and numbering scheme. Updated for general editorial purposes.

Revision Date: 10/11/2007

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