



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

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M0000524 "DuPont" "DIREX" 4L HERBICIDE
Revised 21-DEC-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DIREX" is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

Tradenames and Synonyms

DPX-14740
B11703447

Tradenames and Synonyms (Remarks)

Inactive EPA Reg. No.: 1812-257 (Griffin)

Company Identification

MANUFACTURER/DISTRIBUTOR
DuPont
1007 Market Street
Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.
302-774-1000)
Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S.
703-527-3887)
Medical Emergency : 1-800-441-3637 (outside the U.S.
302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
*DIURON	330-54-1	40
3-[3,4-DICHLOROPHENYL]-1,1-DIMETHYLUREA		
*ETHYLENE GLYCOL	107-21-1	5
INERT INGREDIENTS		55

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

HAZARDS IDENTIFICATION

Emergency Overview

Caution! Harmful if swallowed.

Potential Health Effects

BASED ON THE COMPONENTS

Human Health Effects of Overexposure:

Significant skin permeation, and systemic toxicity, after contact appears unlikely. There are no reports of human sensitization.

Based on data from animal testing, ingestion of large amounts may cause alterations in red blood cell counts and/or anemia, and spleen and liver effects.

No epidemiologic studies are available.

ETHYLENE GLYCOL

The estimated lethal oral dose of Ethylene Glycol in humans is 100 mL.

Immediate effects of inhalation overexposure to Ethylene Glycol may include irritation of the nose and throat with sneezing, sore throat or runny nose. Gross overexposure may cause pulmonary edema (body fluid in the lungs) with cough, wheezing, abnormal lung sounds, possibly progressing to severe shortness of breath and bluish discoloration of the skin; symptoms may be delayed.

Immediate effects of overexposure to Ethylene Glycol by inhalation or ingestion may include headache and nausea. Gross overexposure may cause central nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness; convulsions; altered kidney function which may be accompanied by abnormal urine volume, low back pain, discomfort or edema; kidney failure; deposits of calcium oxalate in the brain, spinal cord and kidneys; liver abnormalities; high blood pressure; irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Other effects may include congestive heart failure; retention of acid in the blood, making oxygen less available in the blood stream and leading to symptoms of increased pulse rate, nausea, vomiting, confusion and weakness which may progress to loss of consciousness; low blood sugar; low blood calcium with muscle twitching; involuntary movement of the eyes; facial paralysis; or fatality.

No increases in chromosomal changes were noted in the circulating blood of workers exposed to Ethylene Glycol.

(HAZARDS IDENTIFICATION - Continued)

Increased susceptibility to the effects of Ethylene Glycol may be observed in persons with pre-existing disease of the kidneys.

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
DIURON				A4

FIRST AID MEASURES

First Aid

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF IN EYES: 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 poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF INHALED: Move person 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 poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies involving this product, call toll free 1-800-441-3637. See Label for Additional Precautions and Directions for Use.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point & Method > 200°F (TCC)
Flammable Limits : Not determined
Autoignition Temperature : Not determined

FIRE FIGHTING HAZARDS & PROCEDURES

General Hazard : Negligible fire hazard when
exposed to heat or flame.
Prevent human exposure to fire,
smoke, fumes or products of
combustion.

Extinguishing Media : Use dry chemical, carbon dioxide,
water spray or foam.

Fire Fighting Equipment : Wear protective clothing and self
contained breathing apparatus.

Hazardous Combustion
Products : Thermal decomposition may release
toxic and/or hazardous gases.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL)
sections before proceeding with clean-up. Use appropriate
PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Clean Up

Cover spill with absorbent material such as sweeping
compound or clay. Sweep up and place in suitable
(fiberboard) containers for later disposal.

For minor spills, leaks, etc., follow all precautions
indicated on the product label and clean up immediately.
Take special care to avoid contamination of equipment and
facilities during cleanup procedures and disposal of
wastes. In the event of a major spill, fire or other
emergency, call 1-800-441-3637 day or night.

HANDLING AND STORAGE

Handling (Personnel)

USERS SHOULD: Wash hands thoroughly with soap and water
after handling and before eating, drinking, chewing gum,
using tobacco, or using the toilet. Remove clothing/PPE
immediately if pesticide gets inside. Then wash thoroughly
and put on clean clothing. Remove PPE immediately after
handling this product. Wash the outside of gloves before

(HANDLING AND STORAGE - Continued)

removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage

Do not contaminate water, food or feed by storage or disposal. Store product in original container only. Store in a cool, dry place.

Keep out of reach of children.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Refer to the product label.

Personal Protective Equipment

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistant category selection chart.

Pilots, flaggers and groundboom applicators must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Mixers, loaders, other applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical resistant gloves made of any waterproof material such as polyethylene or polyvinylchloride.
- A NIOSH approved dust/mist filtering respirator with any N, R, P, or HE filter or with approval number prefix TC-21C.
- Chemical resistant apron when mixing, loading, or cleaning equipment or spills.

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

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls.
- Chemical-resistant gloves made of any waterproof material.
- Shoes plus socks.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Exposure Guidelines

Applicable Exposure Limits

DIURON

PEL (OSHA) : None Established
TLV (ACGIH) : 10 mg/m³, 8 Hr. TWA, A4
AEL * (DuPont) : 1 mg/m³, 8 & 12 Hr. TWA, total dust

ETHYLENE GLYCOL

PEL (OSHA) : None Established
TLV (ACGIH) : Ceiling: 39.4 ppm, 100 mg/m³, aerosol, A4
AEL * (DuPont) : 50 ppm, 8 & 12 Hr. TWA, vapor
10 mg/m³, 8 & 12 Hr. TWA, particulate
Aerosol

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Vapor Pressure : 0.000001 Pa (diuron @ 25°C)
Specific Gravity : 1.48 (diuron)
Density : 9.78 lbs/gal
Solubility in Water : 42 mg/L (diuron @ 25°C)
pH : 6.5 - 7.5
Boiling Point : Not determined
Melting Point : Not determined
Odor : Odorless
Color : White
Physical State : Viscous suspension

STABILITY AND REACTIVITY

Chemical Stability

General: This material is stable under normal conditions.
Incompatible Materials: Not determined
Hazardous Decomposition: Thermal decomposition may release toxic and/or hazardous gases.
Hazardous Polymerization: Material is not known to polymerize.

TOXICOLOGICAL INFORMATION

Animal Data

DIREX 4L

Oral LD50: 1919 mg/kg (male/female) rats
Dermal LD50: > 5000 mg/kg (male/female) rats
Inhalation 4-hour LC50: > 2.02 mg/L (male/female) rats

Direx 4L is minimally irritating to the eye and is not a skin irritant or a skin sensitizer in animals.

DIURON

Repeated ingestion of Diuron led to increased hemolysis (destruction) of red blood cells and and hemolytic anemia after continued exposure to high doses. Secondary effects as a result of excessive red blood cell hemolysis included enlarged spleens, pigment deposits in the spleen, changes in the bone marrow and kidney. Decreased body weights were also related to repeated ingestion of high doses of Diuron.

In addition to the effects described above, long-term effects observed in rodents after repeated ingestion of high doses also included thickening of the urinary bladder and kidney epithelium and liver toxicity. In chronic feeding studies, an increase in urinary bladder and renal pelvic tumors was observed in high-dose rats. A borderline increase in mammary tumors was observed in high-dose female mice, which is considered equivocal.

The weight of evidence indicates that Diuron does not produce genetic damage in bacterial or mammalian cell cultures, or in animals. Diuron is not considered a developmental toxicant. There was no evidence of developmental toxicity in rabbits. In rats, developmental effects occurred at doses higher than those which produced maternal toxicity. Testing in rats demonstrated no reproductive toxicity.

ETHYLENE GLYCOL

Repeated ingestion exposure to Ethylene Glycol caused histopathological changes of the kidneys and bone marrow; kidney effects with oxalate crystal deposition; altered hematology, and decreased body weight. Long-term exposure caused kidney effects with oxalate crystal deposition; histopathological changes of the kidneys, liver, blood vessels, testes, and sperm; and decreased body weight.

No deaths occurred in animals exposed by inhalation to saturated vapors of Ethylene Glycol. Repeated inhalation exposure caused histopathological changes of the liver and lungs; eye irritation; and clouding of the eye (corneal opacity).

(TOXICOLOGICAL INFORMATION - Continued)

In animal testing Ethylene Glycol has not caused carcinogenicity. Reproductive data on adult animals show interference with reproduction only at levels which produce other toxic effects in the adult animal. Tests have shown Ethylene Glycol to cause developmental toxicity in animals. Ethylene Glycol has not produced genetic damage in bacterial cultures. There are reports indicating that Ethylene Glycol does not produce genetic damage in some animal or mammalian cell culture tests; however, there are reports in the literature that suggest positive results.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

DIURON

96-Hour LC50 - Bluegill sunfish: 25 mg/L
96-Hour LC50 - Rainbow trout: 14.7 mg/L
48-Hour EC50 - Daphnia magna: 1.4 mg/L
EC50 - Algae - 0.018 mg/L

AVIAN TOXICITY:

DIURON

LD50 - Bobwhite Quail: 1104 mg/kg

AQUATIC TOXICITY:

ETHYLENE GLYCOL

96 hour LC50 - Fathead minnows: 49,000 mg/L.
48 hour EC50 - Daphnia magna: 46,300 mg/L

96 hour EC50 - Algae: 10,940 mg/L

DISPOSAL CONSIDERATIONS

Waste Disposal

Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

ENVIRONMENTAL HAZARDS:

For terrestrial uses, 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 water when cleaning of equipment or disposing of equipment washwaters. Cover or incorporate spills.

(DISPOSAL CONSIDERATIONS - Continued)

Container Disposal

For Plastic Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

For Fiber Sacks: Completely empty fiber sack by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into manufacturing or application equipment. Then dispose of sack in a sanitary landfill or by incineration if allowed by State and local authorities.

For Fiber Drums With Liners: Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If drum is contaminated and cannot be reused, dispose of in the same manner.

For Paper and Plastic Bags: Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Container Refilling and Disposal (For Containers up to 250 gal): Refer to the product label.

Container Disposal for Bulk Containers: Refer to the product label.

The container must only be refilled with this pesticide product. DO NOT REUSE THE CONTAINER FOR ANY OTHER PURPOSE. Do not transport if the container is damaged or leaking. Disposal of the container must be in compliance with State and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO/ICAO:

Proper Shipping Name : Not regulated.
NOTE: If a single package
contains 100 or more pounds
Diuron, classify as:
Environmentally Hazardous
Substance, Liquid, n.o.s.,
(Diuron)

Hazard Class : 9

(TRANSPORTATION INFORMATION - Continued)

UN/NA Number : 3082
Packaging Group : III
Marine Pollutant : No
Reportable Quantity : Yes (100 pounds) Insert letters
RQ before or after basic
description

REGULATORY INFORMATION

U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : Yes
Fire : No
Reactivity : No

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-678

OSHA:

This product is considered hazardous under the OSHA Hazardous Communication Standard (29 CFR §1910.1200).

TSCA:

All product components are on the TSCA Chemical Inventory.

CERCLA:

Releases of this material (Diuron : RQ = 100 pounds; Ethylene glycol: RQ = 5000 pounds) to air, land, or water are reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to the state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304 and 40 CFR §302.

RCRA:

When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR §261.33.

State Regulations (U.S.)

CALIFORNIA PROP 65

This material contains Diuron, a chemical known to the State of California to cause cancer in laboratory animals.

OTHER INFORMATION

NFPA, NPCA-HMIS

HAZARDS CLASSIFICATION:

(0-minimal, 1-slight, 2-moderate, 3-serious, 4-severe)

HMIS: HEALTH-2 FIRE-1 REACTIVITY-0
NFPA: HEALTH-1 FIRE-1 REACTIVITY-0

Additional Information

Inactive EPA Reg. No.: 1812-257 (Griffin)

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS: DuPont Crop Protection
Address : Wilmington, DE 19898
Telephone : 1-888-638-7668

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS