



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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"DuPont" "Envive" Herbicide
M0000691 Revised 21-DEC-2007

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"DuPont", "Envive" are trademarks of DuPont.

Tradenames and Synonyms

DPX-QER54
B12500618
Envive

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	%
FLUMIOXAZIN 2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)- 2H-1,4-benzoxazin-6-yl]-4,5,6,7- tetrahydro-1H- isoindole-1,3(2H)-dione	103361-09-7	29.2
*CHLORIMURON ETHYL Ethyl 2-[[[(4-Chloro-6-methoxypyrimidin-2-yl) amino]carbonyl]amino]sulfonyl]-benzoate	90982-32-4	9.2
THIFENSULFURON METHYL Methyl 3-[[[(4-methoxy-6-methyl-1,3,5-triazin- 2-yl)amino]carbonyl]amino] sulfonyl]-2- thiophenecarboxylate	79277-27-3	2.9
INERT INGREDIENTS (including percentages of the following)		58.7
KAOLIN CLAY	1332-58-7	

* 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, absorbed through skin, or inhaled. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

Potential Health Effects

Based on data from components, eye contact may cause minor irritation including redness and possible swelling.

Based on data from components, skin contact may cause minor irritation including redness and possibly some minor swelling. Slightly toxic when absorbed through the skin, but is not expected to cause allergic skin reactions.

Based on data from components, inhalation may cause irritation of the upper respiratory passages, with coughing and discomfort. Exposure to higher concentrations of Flumioxazin dust may result in respiratory irritation. Signs and symptoms may include, but not limited to, nasal discharge, sore throat, coughing and difficulty in breathing.

Based on data from components, may be minimally toxic when ingested. Repeated or excessive overexposure to Chlorimuron Ethyl or Flumioxazin by ingestion may cause abnormal liver function with altered enzyme levels in blood, or alterations in blood cell counts and/or anemia.

Exposure to very high concentrations of Flumioxazin Technical in the air resulted in breathing difficulties, decreased activity and some changes in the tissue of the respiratory system.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

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.

(FIRST AID MEASURES - Continued)

IF IN EYES: Hold open eye 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 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

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 a poison control center or doctor. Do not give anything by mouth to an unconscious person.

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.

FIRE FIGHTING MEASURES

Flammable Properties

Not a fire or explosion hazard.

Extinguishing Media

Water Fog, CO2, Foam, Dry Chemical.

Fire Fighting Instructions

Wear self-contained breathing apparatus. Wear full protective equipment. Runoff from fire control may be a pollution hazard.

If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Decontaminate personal protective equipment and fire fighting equipment before reuse.

HAZARDOUS COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce: Oxides of nitrogen. Combustion may produce toxic: Nitrogen compounds, fluorine compounds. Incomplete combustion can produce carbon monoxide.

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.

Avoid dust generation.

Initial Containment

Dike spill. Prevent material from entering sewers, waterways, or low areas. Follow applicable Federal, State/Provincial and Local laws/ regulations. Prevent groundwater contamination.

Spill Clean Up

Shovel or sweep up. Dispose of in an approved container.

LAND: Clean up spill immediately. Vacuum or sweep up material and place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

WATER: Clean up spill immediately. Absorb spill with inert material. Remove contaminated water for treatment or 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.

Accidental Release Measures

If spill area is on ground near valuable plants or trees remove top 2 inches of soil after initial cleanup

HANDLING AND STORAGE

Handling (Personnel)

Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material.

(HANDLING AND STORAGE - Continued)

USERS SHOULD: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing 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 removing. As soon as possible, wash thoroughly and change into clean clothing.

Handling (Physical Aspects)

Avoid dust generation.

Storage

Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in a cool, dry place. Keep out of reach of children.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Use only with adequate ventilation. Keep container tightly closed.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR part 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Important: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "Applicators and Other Handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

Personal Protective Equipment

Always follow the label instructions when handling this product.

Some of the materials that are chemically-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.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves made of any water proof material such as polyethylene or polyvinylchloride.
- Shoes plus socks.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product. 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 water proof material such as polyethylene or polyvinylchloride.
- Shoes plus socks.

Exposure Guidelines

Applicable Exposure Limits

CHLORIMURON ETHYL

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

THIFENSULFURON METHYL

PEL (OSHA) : None Established
 TLV (ACGIH) : None Established
 AEL * (DuPont) : 5 mg/m³, 8 & 12 Hr. TWA

KAOLIN CLAY

PEL (OSHA) : 15 mg/m³, total dust, 8 Hr. TWA
 5 mg/m³, respirable dust, 8 Hr. TWA
 TLV (ACGIH) : 2 mg/m³, respirable dust, 8 Hr. TWA, A4
 AEL * (DuPont) : None Established

* 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

Odor : Slight, non-descript
 Form : Solid, dispersible granules
 Color : Light brown granules with ivory colored granules
 pH : 6.3-7.1
 Bulk Density : 0.60 - 0.67 g/mL

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

None reasonably foreseeable.

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides.

Decomposition

Decomposition will not occur.

Polymerization

Polymerization will not occur.

TOXICOLOGICAL INFORMATION

Animal Data

Oral LD50: > 5,000 mg/kg in rats
Dermal LD50: > 2000 mg/kg in rabbits
Inhalation 4-hr LC50: > 0.96 mg/L in rats

Based on data from components, this product is a moderate eye irritant, a slight skin irritant, but is not a skin sensitizer in animals.

Compound related effects of Flumioxazin Technical noted in rats following subchronic exposures at high dose levels were hamatotoxicity including anemia, and increases in liver, spleen, heart, kidney, and thyroid weights in dogs, the effects produced at high dose levels included a slight prolongation in activated partial thromboplastin time, increased cholesterol and phospholipid, elevated alkaline phosphatase, increased liver weights and histopathological changes in the liver. The lowest no-observable-effect-level (NOEL) in subchronic studies was 10 ppm in the three-month toxicity study in dogs.

Flumioxazin Technical produces developmental toxicity in rats in the absence of maternal toxicity. Developmental effects noted consisted primarily of decreased number of live fetuses and fetal weights, cardiovascular abnormalities, wavy ribs and decreased number of ossified sacrococcygeal vertebral bodies. Developmental NOEL in the rat oral and dermal developmental toxicity studies were 10 30 mg/kg/day, respectively. The response in rabbits was very different from that in rats. No developmental toxicity was noted in rabbits at doses up to 3000 mg/kg/day, a dose well above the maternal NOEL of 1000 mg/kg/day.

(TOXICOLOGICAL INFORMATION - Continued)

1000 mg/kg/day.

In a one-year dog feeding study, Flumioxazin Technical produced treatment-related changes in blood chemistry and increased liver weights. Based on these data the NOEL 10 mg/kg/day. Dietary administration of Flumioxazin Technical for 18 months produced liver changes in mice. There was no evidence of any treatment-related oncogenic effect. The NOEL for this study is 754 mg/kg/day. Dietary administration of Flumioxazin Technical for 24 months produced anemia and chronic nephropathy in rats. The anemia lasted throughout the treatment period; however, it was not progressive nor aplastic in nature. No evidence of an oncogenic effect was observed. The lowest NOEL for this study was 1.8 mg/kg/day. Reproductive toxicity was observed in F1 males, P1 females and F1 females at 18.9 mg/kg/day. Flumioxazin Technical, the highest dose tested and a dose that also produced signs systemic toxicity. Toxicity was also observed in the F1 and F2 offspring at doses of 12.7 mg/kg/day and greater.

The lowest NOELs for parents and offspring were 12.7 and 6.3 mg/kg/day, respectively.

Flumioxazin Technical was not mutagenic in most in vitro assays, gene mutation and a chromosome aberration assay in the absence of metabolic activation. In three in vivo assays, chromosome aberration, unscheduled DNA synthesis and micronucleus assay, Flumioxazin Technical was not mutagenic. The only positive response was observed in the in vitro chromosome aberration assay in the presence of metabolic activation. Overall, Flumioxazin Technical does not present a genetic hazard.

CHLORIMURON ETHYL

Repeated applications of Chlorimuron Ethyl to the skin of rabbits for 21 days at doses up to and including the limit dose resulted in no significant toxicological effects. Repeated and long-term ingestion of Chlorimuron Ethyl by rats, mice, and dogs caused liver effects, anemia, altered clinical chemistry, and/or decreased body weight at higher exposure levels. In rats and mice, Chlorimuron Ethyl has not caused carcinogenicity.

Exposure of pregnant rabbits caused developmental delays in the fetus at maternally toxic doses. However, studies in rats produced no evidence of developmental toxicity. Reproductive data in rats show nutritional and organ effects in offspring only at levels which produce other toxic effects in the adult animal. There were no effects on fertility or lactation indices in rats. Tests have shown that Chlorimuron Ethyl does not cause genetic damage in bacterial or mammalian cell cultures, or in animals.

THIFENSULFURON METHYL

The effects in animals from short inhalation exposure to Thifensulfuron Methyl include nonspecific effects such as weight loss, and irritation when compared to the control group.

(TOXICOLOGICAL INFORMATION - Continued)

Repeated ingestion exposures to Thifensulfuron Methyl caused decreased body and organ weights, and some blood chemistry changes, including increased blood urea nitrogen and decreased protein and globulins. Long-term exposures caused an increase in liver weights, decreased body weight gain, and a decreased level of sodium in the blood when compared to the control group.

No carcinogenic effects were observed in animal tests with Thifensulfuron Methyl. Animal data show developmental effects only at exposure levels producing toxic effects in the adult animal. Tests in animals demonstrate no reproductive toxicity. Thifensulfuron Methyl does not produce genetic damage in bacterial or mammalian cell cultures or animals.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

CHLORIMURON ETHYL

Low toxicity.

96 hour LC50 - Rainbow trout: > 1,000 mg/L.

AVIAN TOXICITY:

CHLORIMURON ETHYL

LD50 - Mallard Duck: > 2,510 mg/kg.

LC50 - Bobwhite Quail: > 5,600 ppm.

AQUATIC TOXICITY:

THIFENSULFURON METHYL

96 hour LC50 - Rainbow trout: > 100 mg/L.

96 hour LC50 - Bluegill sunfish: > 100 mg/L.

96 hour EC50 - Freshwater algae: 0.840 - 1.03 mg/L.

AVIAN TOXICITY:

Acute Oral LD50 - Mallard Duck: > 2510 mg/kg.

Acute Dietary LC50 - Mallard Duck: > 5620 mg/kg.

Acute Dietary LC50 - Bobwhite Quail: > 5620 mg/kg

AQUATIC TOXICITY:

FLUMIOXAZIN

96-hour LC50 rainbow trout: 2.3 mg/L

96-hour LC50 bluegill sunfish: > 21 mg/L

48-hour LC50 Daphnia magna: 5.5 mg/L

96-hour LC50 sheepshead minnow: > 4.7 mg/L

96-hour (shell deposition) EC50 eastern oyster: 2.8 mg/L

96-hour LC50 mysid shrimp: 0.23 mg/L

AVIAN TOXICITY:

FLUMIOXAZIN:

Oral LD50 Bobwhite quail: > 2250 mg/kg

Dietary LC50 Bobwhite quail: > 5620 ppm

Dietary LC50 Mallard duck: > 5620 ppm

OTHER NON-TARGET ORGANISM TOXICITY: Flumioxazin Technical is

(ECOLOGICAL INFORMATION - Continued)

practically non-toxic to bees. The acute contact LC50 in bees was >105 ug/bee.

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

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

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Do not apply where/-when conditions favor runoff.

This product is toxic to non-target plants and aquatic invertebrates. Drift or runoff may be hazardous to non-target plants and aquatic organisms in neighboring areas.

This pesticide is toxic to plants and should be used strictly in accordance with the drift and run off precautions listed on the product label to minimize off site exposures.

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.

(DISPOSAL CONSIDERATIONS - Continued)

For Bags Containing Water Soluble Packets: Do not reuse the outer box or the resealable plastic bag. When all water-soluble packets are used, the outer packaging should be clean and may be disposed of in a sanitary landfill or by incineration, or if allowed by State and local authorities, by open burning. If burned, stay out of smoke. If the resealable plastic bag contacts the formulated product in any way, the bag must be triple-rinsed with clean water. Add the rinsate to the spray tank and dispose of the outer wrap as described above.

For Metal Containers (non aerosol): Triple rinse (or equivalent) the container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

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 for instructions. If the container is to be refilled, do not rinse with any material or introduce any pesticide other than this product.

Container Disposal for Bulk Containers: Refer to the product label for instructions. The container must only be refilled with this pesticide product. DO NO 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.

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.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMO
Proper Shipping Name : NOT REGULATED

REGULATORY INFORMATION

U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes
Chronic : Yes
Fire : No
Reactivity : No
Pressure : 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. 352-756

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating
Health : 1
Flammability : 1
Reactivity : 0

NPCA-HMIS Rating
Health : 1
Flammability : 1
Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

Additional Information

Product uses a kaolin clay without silica quartz or titanium dioxide.

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.

(Continued)

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