Material Safety Data Sheet

Dow AgroSciences™

Dimension™ Turf Herbicide

™Trademark of Dow AgroSciences LLC

In case of emergency Call CANUTEC at 613 996 6666

1. Product Identification:

Product name: Dimension Turf Herbicide
Product use: For pre-emergence and early post-emergence control of crabgrass in turf.
Product code number: 52179
GMID numbers: 173203

Supplier:
Dow AgroSciences Canada Inc.
Suite 2100, 450 - 1st Street SW,
Calgary, Alberta,
Canada, T2P 5H1
www.dowagro.ca

Effective date: November 24, 2008

This product is regulated under authority of the Pest Control Products Act

2. Composition:

Composition	CAS Number	% (w/w)
Dithiopyr	97886-45-8	12.7
Naphthalene	91-20-3	8.1
1,2,4-Trimethylbenzene	95-63-6	4.3
2-ethylhexanol	104-76-7	0.2
Balance		74.7

3. Hazard Identification:

Emergency Overview:
This product is a yellow liquid with a solvent odor. This product may cause skin and eye irritation. Avoid inhalation of vapor or mists.

Potential Health Effects:
Eyes: May cause eye irritation. Vapor may cause eye irritation experienced as mild discomfort and redness. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.
Skin contact: Prolonged or repeated contact may cause skin irritation.
Skin absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Skin sensitization: For the minor component naphthalene, skin contact may cause an allergic skin reaction in a small proportion of individuals.
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result ofnormal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.
Inhalation: Excessive exposure may cause irritation to upper respiratory tract (nose and throat). This product may cause central nervous system effects.

4. First Aid Measures:

Eyes: Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first five minutes, and then continue rinsing eyes. Call a poison control center or doctor for treatment advice.
Skin: Take off contaminated clothing. Wash skin immediately with soap and plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice. Shoes and other leather items, which cannot be decontaminated, should be disposed of properly.
Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth-to-mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

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Note to physician: If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision to induce vomiting should be made by a physician. Maintain adequate ventilation and oxygenation of the patient. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. Fire-fighting Measures:

Flash point: 63°C (Tag closed cup)

Flammable limits: For solvent, naphtha LFL: 0.8%; UFL: 7.0%

Auto-ignition temperature: Not available

Extinguishing media: Water fog or fine spray, CO2, foam, or dry chemical. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Fire fighting procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the “Accidental Release Measures” and the “Ecological Information” sections of this (M)SDS.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Unusual fire and explosion hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: nitrogen oxides, carbon monoxide, carbon dioxide.

6. Accidental Release Measures:

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Small spills: Absorb with materials such as: caly, dirt, sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact CANUTEC at 613 996 6666 and local authorities.

Personal Precautions: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage:

General Handling: Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Other Precautions: Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

Storage: Store in a dry place. Store in original container. Keep container tightly closed. Do not store near food, foodstuffs, drugs or potable water supplies.

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8. Exposure Controls, Personal Protection and Exposure Limits:

Exposure limits:

Component	List	Type	Value
Dithiopyr	Dow IHG	TWA	0.25 mg/m3
1,2,4-Trimethylbenzene	CAD AB OEL	TWA	123 mg/m3 25 ppm
	CAD BC OEL	TWA	25 ppm
	CAD ON OEL	TWA	123 mg/m3 25 ppm
	ACGIH	TWA	25 ppm
	OEL (QUE)	TWA	123 mg/m3 25 ppm
Naphthalene	CAD AB OEL	TWA	52 mg/m3 10 ppm
	CAD AB OEL	STEL	79 mg/m3 15 ppm
	CAD BC OEL	TWA	10 ppm
	CAD BC OEL	STEL	15 ppm
	CAD ON OEL	TWA	52 mg/m3 10 ppm
	CAD ON OEL	STEL	78 mg/m3 15 ppm
	ACGIH	TWA	10 ppm
	ACGIH	STEL	15 ppm
	OEL (QUE)	TWA	52 mg/m3 10 ppm
	OEL (QUE)	STEL	79 mg/m3 15 ppm

Engineering controls: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.
Respiratory Protection: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required for certain operations, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: organic vapor cartridge with a particulate pre-filter.
Skin Protection: Wear clean, body-covering clothing.
Hand Protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: viton, polyethylene, chlorinated polyethylene, polyvinyl chloride (PVC or vinyl), styrene/butadiene rubber, polyvinyl alcohol (PVA), and ethyl vinyl alcohol laminate (EVAL). Examples of acceptable glove barrier materials include: butyl rubber, natural rubber (latex), and nitrile/butadiene rubber (nitrile or NBR). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Eyes: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

9. Physical and Chemical Properties:

Boiling point: 176 to 210°C for solvent, naphtha
Vapor pressure: 3 mm Hg at 25°C for solvent, naphtha
Vapor density: (Air = 1): 4.8 for solvent, naphtha
pH: 4.1 as aqueous emulsion
Appearance: yellow liquid
Odor: Solvent
Coefficient of water/oil distribution: not available
Specific gravity: 0.95
Evaporation rate: <1
Solubility in water: emulsifies
Viscosity: 11 cP
Odor threshold: not available
Melting point: not available

10. Stability and Reactivity:

Stability: Stable under recommended storage conditions. See Storage, Section 7. Thermally stable at recommended temperatures and pressures.
Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Avoid static discharge. Avoid direct sunlight.
Incompatibility: Avoid contact with strong oxidizing agents.
Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can

include and are not limited to: carbon monoxide, carbon dioxide, and nitrogen oxides.
Hazardous polymerization: Will not occur

11. Toxicological Information:

Skin absorption: The dermal LD50 has not been determined. Estimated LD50, rabbits, is >2000 mg/kg
Ingestion: Single dose oral LD50 has not been determined. Estimated LD50, rats, is >2,000 mg/kg
Inhalation: The maximum practically attainable concentration of this product in the tests (5.98 mg/L for four hours) produced no ill effects in test animals.
Sensitization: Did not cause allergic skin reactions when tested in guinea pigs. For the minor component naphthalene, skin contact may cause an allergic skin reaction in a small proportion of individuals.
Repeated Dose Toxicity: For the active ingredient, in animals, effects have been reported on the following organs after ingestion: liver, kidney, adrenal gland, thyroid, gall bladder, and blood. Excessive exposure to the solvent may cause respiratory irritation and central nervous system depression.
Chronic Toxicity and Carcinogenicity: Active ingredient did not cause cancer in laboratory animals. The solvent contains naphthalene, which has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.
Developmental Toxicity: The active ingredient did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother. For the minor component, excessive ingestion of 2-ethylhexanol caused birth defects in laboratory animals only at doses toxic to the mother. Occupational exposure of 2-ethylhexanol by the inhalation or dermal routes poses no significant threat to the offspring. The data presented are for the following material: Aromatic 100. Has caused birth defects in lab animals only at doses producing severe toxicity in the mother. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. The solvent did not cause birth defects or any other fetal effects in laboratory animals.
Reproductive Toxicity: In animal studies, active ingredient did not interfere with reproduction. For the solvent(s), available data are inadequate to determine effects on reproduction.
Genetic Toxicity: For the active ingredient, *in-vitro* genetic toxicity studies were negative. For naphthalene, in-vitro genetic toxicity studies were negative in some cases and positive in other cases.

12. Ecological Information:

ENVIRONMENTAL FATE

Data for component: Dithiopyr

Movement & Partitioning
Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Expected to be relatively immobile in soil (Koc >5000).

Persistence & Degradability
No relevant information found.

Data for component: Naphthalene

Movement & Partitioning
Bioconcentration potential is high (BCF >3000 or Log Pow between 5 and 7).
Potential for mobility in soil is medium (Koc between 150 and 500).

Persistence & Degradability
Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD >40%).

Data for component: 1,2,4-trimethylbenzene

Movement & Partitioning
Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Potential for mobility in soil is low (Koc between 500 and 2000).

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Persistence & Degradability
Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability).

Data for component: 2-ethylhexanol

Movement & Partitioning
Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Potential for mobility in soil is low (Koc between 500 and 2000).

Persistence & Degradability
Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches >70% mineralization in OECD test(s) for inherent biodegradability).

ECOTOXICITY
Based largely or completely on information for the active ingredient, material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested). Based largely or completely on date for major component(s), material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested). Dithiopyr is considered toxic to bees.

13. Disposal Considerations:
Unused unwanted product: Contact Dow AgroSciences or your provincial regulatory agency for disposal information.
Container disposal: Refer to the product label for instructions regarding cleaning and disposal of empty pesticide containers. If these instructions are missing or not understood, contact Dow AgroSciences at 800 667 3852 or your provincial regulatory agency for direction.

14. Transport Information:
TDG Small Container
NOT REGULATED

TDG Large Container
NOT REGULATED

IMDG
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.
Technical Name: DITHIOPYR
Hazard Class: 9 ID Number: UN3082
Packing Group: PG III
EMS Number: F-A, S-F

ICAO/IATA
NOT REGULATED

15. Regulatory Information:
Pest Control Products Act registration number: 23003
For information phone: 800 667 3852
Master reference: 88828
MSDS status: Revised Sections: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14 & 15
Date of last revision: February 10, 2006

16. Other Information:
National Fire Code classification: IIIA
NFPA ratings: Health: 3; Flammability: 2; Reactivity: 0.
Notice: The information contained in this Material Safety Data Sheet ("MSDS") is current as of the effective date shown in Section 1 of this MSDS and may be subject to amendment by Dow AgroSciences Canada Inc. ("DASCI") at any time. DASCI accepts no liability whatsoever which results in any way from the use of MSDS that are not published by DASCI, or have been amended without DASCI express written authorization. Users of this MSDS must satisfy themselves that they have the most recent and authorized version of this MSDS and shall bear all responsibility and liability with respect thereto. Any conflict or inconsistencies as to the contents of this MSDS shall be resolved in favor of DASCI by the most recent version of the MSDS published by DASCI.