

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

SURFLAN* A.S. HERBICIDE

Effective Date: 7-30-04
Product Code: 20121
MSDS: 003738

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Surflan* A.S. Herbicide

COMPANY IDENTIFICATION:

Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Oryzalin: 3,5-Dinitro- N4,N4-dipropyl-sulfanilamide	CAS# 019044-88-3	40.4%
Balance, Total, Including:		59.6%
Propylene Glycol	CAS# 000057-55-6	
Glycerin	CAS# 000056-81-5	

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Opaque bright orange liquid with a slight aromatic odor. May cause eye and skin irritation. Toxic to avian and aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

4. FIRST AID:

EYES: Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION: Move person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: No ignition up to 200°F (93.3°C)
METHOD USED: SCC

FLAMMABLE LIMITS

LFL: Water based product
UFL: Water based product

AUTO-IGNITION TEMPERATURE: Water based product

EXTINGUISHING MEDIA: This product is a water based suspension and will not burn.

FIRE AND EXPLOSION HAZARDS: This material will not burn until a sufficient amount of water has evaporated. At this point, the material will exhibit the flammability characteristics of propylene glycol and oryzalin. The explosive potential of oryzalin as an airborne dust is rated as severe. The minimum ignition temperature for a dust cloud is 714°F (379°C).

FIRE-FIGHTING EQUIPMENT: This product is a water based suspension and will not burn. However, if product is involved in a fire, wear positive-pressure, self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Use absorbent material to contain and clean up small spills and dispose as waste. Report large spills to Dow AgroSciences at 800-992-5994. Prevent runoff.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. May cause skin sensitization reactions in certain individuals. Avoid contact with skin, eyes, and clothing. Avoid breathing vapor or spray mist. Do not contaminate water, food, or feed by storage or disposal. Store in original container only. Read the product label for personal protective equipment, which may be required by the Worker Protection Standard of 1993.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Propylene glycol: AIHA WEEL is 10 mg/M³ for total vapor and aerosol.

Glycerin: ACGIH TLV is 10 mg/M³. OSHA PEL is 15 mg/M³ total, 5 mg/M³ respirable.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use safety glasses.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use a NIOSH approved air-purifying respirator.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use chemically protective clothing resistant to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full-body suit will depend on operation.

APPLICATORS AND ALL OTHER HANDLERS: Please refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: (@ 1 atmosphere) 212°F (100°C)
VAPOR PRESSURE: Approximately 23 mm Hg @ 25°C
VAPOR DENSITY: 1.178 relative to air @ 25°C
SOLUBILITY IN WATER: Miscible in water
SPECIFIC GRAVITY: 1.138 to 1.239 @ 25°C
APPEARANCE: Bright orange opaque liquid
ODOR: Slight aromatic odor
pH: (aqueous 50/50) 5.0 to 6.8

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) This product is water-based and as such is stable under normal handling conditions. If the water in the mixture evaporates; however, the resultant mixture should be handled with care. The explosive potential of oryzalin as an airborne dust is rated as severe. The minimum ignition temperature for a dust cloud is 714°F (379°C)

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID)
None known

HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen oxides and other toxic gases and fumes may be formed if product is involved in a fire.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause slight temporary eye irritation. Corneal injury is unlikely.

SKIN: Prolonged contact may cause skin irritation with local redness. Prolonged or frequently repeated skin contact may cause an allergic skin reaction in some individuals. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >5000 mg/kg.

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INGESTION: Very low toxicity if swallowed. The oral LD₅₀ for rats and mice is 5000 mg/kg. Harmful effects not anticipated from swallowing small amounts.

INHALATION: At room temperature, exposure to vapor is minimal low volatility; vapor from heated material may cause respiratory irritation and other effects. The LC₅₀ for rats was >6.30 mg/L in 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:

Contains component(s) which, in animals, have been shown to cause liver, kidney, bladder, spleen or blood effects. For propylene glycol, in humans, symptoms may include central nervous system depression (headache, dizziness, drowsiness, and incoordination).

CANCER INFORMATION: Thyroid follicular cell tumors observed in rats were considered a secondary response caused by mechanisms not relevant to humans. Benign skin and adnexal tumors observed in rats may also have been secondary to thyroid effects.

TERATOLOGY (BIRTH DEFECTS): Oryzalin did not cause birth defects in animals; other fetal effects occurred only at doses toxic to the mother.

REPRODUCTIVE EFFECTS: For the majority of components, in animal studies, did not interfere with reproduction. Reproductive effects seen in female animals are believed to be due to altered nutritional states resulting from extremely high doses of glycerin given in the diet. Similar effects have been seen in animals fed synthetic diets.

MUTAGENICITY: For oryzalin and propylene glycol: in-vitro and animal mutagenicity studies were negative.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

Based largely or completely on information for oryzalin.
Bioconcentration potential is low (BCF is <100 or Log Pow <3).

DEGRADATION & PERSISTENCE:

Based largely or completely on information for oryzalin.
Degradation is expected in the soil environment within days to weeks.

ECOTOXICOLOGY:

Material is moderately toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 1 and 10 mg/L in most sensitive species tested
Acute immobilization EC₅₀ in water flea (*Daphnia magna*) is 2.81 mg/L.
Acute LC₅₀ in rainbow trout (*Oncorhynchus mykiss*) is >100 mg/L.
Material is slightly toxic to birds on an acute basis (LD₅₀ is between 501 and 2000 mg/kg.
Acute oral LD₅₀ in bobwhite (*Colinus virginianus*) is 1046 mg/kg.
Acute contact LD₅₀ in honeybee (*Apis mellifera*) is >100 µg.
Acute oral LD₅₀ for honeybee (*Apis mellifera*) is >110 µg.
LC₅₀ in earthworm (*Eisenia foetida*) is >10,000 mg/kg.
Growth inhibition EC₅₀ in duckweed (*Lemna sp.*) is 0.064 mg/L.
Growth inhibition EC₅₀ in green alga (*Selenastrum capricornutum*) is 0.284 mg/L.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

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14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION INFORMATION:

For all package sizes by all modes of transportation:
This material is not regulated for transport.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
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ORYZALIN	019044-88-3	40.4%
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SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
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1,2,3-Propanetriol (Glycerin)	000056-81-5	PA1
1,2-Propanediol (Propylene Glycol)	000057-55-6	PA1

PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

CATEGORY	RATING
Health	2
Flammability	0
Reactivity	0

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 3, 8, 11, 12 & 13
Reference: DR-0330-8176
Replaces MSDS dated: 5/2/02

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult Dow AgroSciences For Further Information.