Dow AgroSciences LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
SureStart(TM) II Herbicide

COMPANY IDENTIFICATION
Dow AgroSciences LLC
A Subsidiary of The Dow Chemical Company
9330 Zionsville Road
Indianapolis, IN 46268-1189
United States

Customer Information Number: 800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. Hazards Identification

Emergency Overview
Color: Tan
Physical State: Liquid.
Odor: Mild
Hazards of product:

WARNING! May cause allergic skin reaction. Isolate area. Toxic fumes may be released in fire situations. Suspect cancer hazard. May cause cancer. Highly toxic to fish and/or other aquatic organisms.

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

Potential Health Effects
Eye Contact: May cause moderate eye irritation. Corneal injury is unlikely.
Skin Contact: Brief contact may cause slight skin irritation with local redness.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Skin Sensitization: For similar material(s): Has demonstrated the potential for contact allergy in mice.
Inhalation: No adverse effects are anticipated from single exposure to mist. Based on the available data, respiratory irritation was not observed.
Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Effects of Repeated Exposure: For the active ingredient(s): In animals, effects have been reported on the following organs: Blood. Central nervous system. Kidney. Liver. Testes. For the minor component(s): In animals, effects have been reported on the following organs: Kidney. Liver. Lung. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.
Cancer Information: For the active ingredient(s): Acetochlor. Has caused cancer in laboratory animals. Tumors were observed only at levels which produced significant toxicity, thus exceeding the maximum tolerated dose. For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown. 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.
Birth Defects/Developmental Effects: For similar active ingredient(s): Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure. For the active ingredient(s): Acetochlor. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the minor component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Reproductive Effects: For the active ingredient(s): Acetochlor. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

3. Composition Information

Component	CAS #	Amount
Acetochlor	34256-82-1	41.67 %
Clopyralid monoethanolamine salt	57754-85-5	4.27 %
Flumetsulam	98967-40-9	1.3 %
Furilazole	121776-33-8	0.99 %
Propylene glycol	57-55-6	8.7 %
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	1.5 %
Naphthalene	91-20-3	0.1 %
Balance	Not available	41.47 %

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
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.
Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.
Eye Contact: Hold eyes 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 eyes. Call a poison control

center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.
Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of immediate medical attention and special treatment needed
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

Suitable extinguishing media
This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: None known.

Advice for firefighters

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. This material does not burn. Fight fire for other material that is burning.
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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Keep upwind of spill. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Spills or discharge to natural waterways is likely to kill aquatic organisms. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling

General Handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

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

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Flumetsulam	Dow IHG	TWA	3 mg/m3
Propylene glycol	WEEL	TWA Aerosol.	10 mg/m3
Naphthalene	ACGIH OSHA Table Z-1	TWA PEL	10 ppm SKIN 50 mg/m3 10 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.
A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.
It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Personal Protection

Eye/Face Protection: Use chemical goggles.
Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). 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.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Tan
Odor	Mild
pH	4.31 *pH Electrode*
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	> 100 °C (> 212 °F) *Pensky-Martens Closed Cup ASTM D 93*
Flammability (solid, gas)	No data available
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	No test data available
Solubility in water (by weight)	No test data available
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Explosive properties	No
Oxidizing properties	No significant increase (>5C) in temperature.
Liquid Density	1.0881 g/cm3 *Digital density meter*

10. Stability and Reactivity

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions

Polymerization will not occur.

Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible Materials: Strong oxidizers.

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. Hydrogen chloride. Nitrogen oxides.

11. Toxicological Information

Acute Toxicity

Ingestion

For similar material(s): LD50, rat, female > 2,000 mg/kg
No deaths occurred at this concentration.

Dermal

For similar material(s): LD50, rat, male and female > 2,000 mg/kg
No deaths occurred at this concentration.

Inhalation

For similar material(s): LC50, 4 h, Aerosol, rat, male and female > 5.6 mg/l
No deaths occurred at this concentration.

Eye damage/eye irritation

May cause moderate eye irritation. Corneal injury is unlikely.

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Sensitization

Skin

For similar material(s): Has demonstrated the potential for contact allergy in mice.

Respiratory

No relevant data found.

Repeated Dose Toxicity

For the active ingredient(s): In animals, effects have been reported on the following organs: Blood. Central nervous system. Kidney. Liver. Testes. For the minor component(s): In animals, effects have been reported on the following organs: Kidney. Liver. Lung. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.

Chronic Toxicity and Carcinogenicity

For the active ingredient(s): Acetochlor. Has caused cancer in laboratory animals. Tumors were observed only at levels which produced significant toxicity, thus exceeding the maximum tolerated dose. For the active ingredient(s): Flumetsulam. For similar active ingredient(s): Clopyralid. Did not cause cancer in laboratory animals. For the minor component(s): Has caused cancer in laboratory animals. However, the relevance of this to humans is unknown. 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.

Carcinogenicity Classifications:

Component	List	Classification
Naphthalene	IARC	Possibly carcinogenic to humans.; 2B
	NTP	Anticipated carcinogen.

Developmental Toxicity

For similar active ingredient(s): Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure. For the active ingredient(s): Acetochlor. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals. For the active ingredient(s): Flumetsulam. 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(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive Toxicity

For the active ingredient(s): Acetochlor. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For the active ingredient(s): Flumetsulam. For similar active ingredient(s): Clopyralid. In animal studies, did not interfere with reproduction.

Genetic Toxicology

For similar material(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

12. Ecological Information

Toxicity

Data for Component: **Acetochlor**

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). Material is highly toxic to fish on an acute basis (LC50 between 0.1 and 1.0 mg/L). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), 96 h: 0.36 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), 48 h, immobilization: 8.6 mg/l
EC50, eastern oyster (Crassostrea virginica), flow-through test, 96 h: 4.2 mg/l

Aquatic Plant Toxicity

EyC50, Pseudokirchneriella subcapitata (green algae), Growth inhibition (cell density reduction), 96 h: 0.00027 mg/l
EyC50, Lemna minor (duckweed), Growth inhibition (cell density reduction), 7 d: 0.0027 mg/l

Toxicity to Micro-organisms

EC50, OECD 209 Test; activated sludge, Respiration inhibition, 3 h: > 1,000 mg/l

Fish Chronic Toxicity Value (ChV)

Oncorhynchus mykiss (rainbow trout), NOEC:0.13 mg/l

Aquatic Invertebrates Chronic Toxicity Value

Daphnia magna (Water flea), 21 d, NOEC: 0.0221 mg/l

Toxicity to Above Ground Organisms

oral LD50, Colinus virginianus (Bobwhite quail): 928 mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail): > 5620 mg/kg diet.
dietary LC50, Anas platyrhynchos (Mallard duck): > 5620 mg/kg diet.
oral LD50, Apis mellifera (bees): > 100 micrograms/bee
contact LD50, Apis mellifera (bees): > 200 micrograms/bee

Toxicity to Soil Dwelling Organisms

LC50, Eisenia fetida (earthworms), 14 d: 105.5 mg/kg

Data for Component: **Clopyralid monoethanolamine salt**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Fish Acute & Prolonged Toxicity

For similar active ingredient(s): Clopyralid. LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: > 99.9 mg/l

Aquatic Invertebrate Acute Toxicity

For similar active ingredient(s): Clopyralid. EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: > 99.0 mg/l

Toxicity to Above Ground Organisms

For similar active ingredient(s): Clopyralid. oral LD50, Anas platyrhynchos (Mallard duck): 1465 - 2000 mg/kg bodyweight.
For similar active ingredient(s): Clopyralid. dietary LC50, Colinus virginianus (Bobwhite quail): > 5000 mg/kg diet.
For similar active ingredient(s): Clopyralid. contact LD50, Apis mellifera (bees): > 100 micrograms/bee
For similar active ingredient(s): Clopyralid. oral LD50, Apis mellifera (bees): > 98.1 micrograms/bee

Data for Component: **Flumetsulam**

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: > 300 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, Daphnia magna (Water flea), static test, 48 h, survival: > 300 mg/l

Aquatic Plant Toxicity

EbC50, Pseudokirchneriella subcapitata (green algae), biomass growth inhibition, 120 h: 0.00493 mg/l

EC50, Lemna gibba, static test, biomass growth inhibition, 14 d: 0.0051 mg/l

Fish Chronic Toxicity Value (ChV)

Pimephales promelas (fathead minnow), flow-through test, 32 d, NOEC:197 mg/l

Aquatic Invertebrates Chronic Toxicity Value

water flea Daphnia magna, static test, 21 d, NOEC: 200 mg/l

Toxicity to Above Ground Organisms

oral LD50, Colinus virginianus (Bobwhite quail): > 2250 mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail): > 5620 mg/kg diet.
contact LD50, Apis mellifera (bees): > 100 ug/bee
oral LD50, Apis mellifera (bees): > 48.1 ug/bee

Toxicity to Soil Dwelling Organisms

LC50, Eisenia fetida (earthworms), 14 d: > 950 mg/kg

Data for Component: **Furilazole**

Material is moderately toxic to fish on an acute basis (LC50 between 1 and 10 mg/L). Material is slightly toxic to aquatic invertebrates on an acute basis (LC50/EC50 between 10 and 100 mg/L). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Fish Acute & Prolonged Toxicity

LC50, Lepomis macrochirus (Bluegill sunfish), 96 h: 4.6 mg/l
LC50, Oncorhynchus mykiss (rainbow trout), 96 h: 6.2 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 26 mg/l

Toxicity to Above Ground Organisms

LD50, Colinus virginianus (Bobwhite quail): > 2,000 mg/kg
dietary LC50, Colinus virginianus (Bobwhite quail): > 5,620 ppm
dietary LC50, Anas platyrhynchos (Mallard duck): > 5,620 ppm

Data for Component: **Propylene glycol**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 40,613 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, Ceriodaphnia Dubia (water flea), static test, 48 h: 18,340 mg/l

Aquatic Plant Toxicity

ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 96 h: 19,000 mg/l

Toxicity to Micro-organisms

EC50, activated sludge test (OECD 209), Respiration inhibition, 3 h: > 1,000 mg/l

Aquatic Invertebrates Chronic Toxicity Value

Ceriodaphnia Dubia (water flea), semi-static test, 7 d, number of offspring, NOEC: 13020 mg/l

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LL50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 2 - 5 mg/l

Aquatic Invertebrate Acute Toxicity

EL50, Daphnia magna (Water flea), static test, 48 h, immobilization: 3 - 10 mg/l

Aquatic Plant Toxicity

EL50, Pseudokirchneriella subcapitata (green algae), static test, 72 h: 11 mg/l

Toxicity to Above Ground Organisms

Based on information for a similar material: dietary LC50, Colinus virginianus (Bobwhite quail): > 6,500 ppm

Based on information for a similar material: oral LD50, Colinus virginianus (Bobwhite quail): > 2,250 mg/kg

Data for Component: **Naphthalene**

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).

Fish Acute & Prolonged Toxicity

LC50, Oncorhynchus mykiss (rainbow trout), 96 h: 0.11 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 1.6 - 24.1 mg/l

Fish Chronic Toxicity Value (ChV)

Other, flow-through test, 40 d, mortality, NOEC, NOEC:0.37 mg/l

Persistence and Degradability

Data for Component: **Acetochlor**

No relevant information found.

Stability in Water (1/2-life):

; pH 5;Stable

; pH 7;Stable

; pH 9;Stable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
5.51826E-11 cm3/s	2.3 h	Estimated.

Data for Component: **Clopyralid monoethanolamine salt**

For similar active ingredient(s): Clopyralid. Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Data for Component: **Flumetsulam**

Material is not readily biodegradable according to OECD/EEC guidelines.

Stability in Water (1/2-life):

> 365 d; 50 °C; pH 4 - 9;Stable

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
3 %	28 d	OECD 301B Test	fail

Chemical Oxygen Demand: 1.12 mg/mg

Theoretical Oxygen Demand: 1.03 mg/mg

Data for Component: **Furilazole**

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

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
1 %	28 d	OECD 301F Test	fail

Data for Component: **Propylene glycol**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
81 %	28 d	OECD 301F Test	pass
96 %	64 d	OECD 306 Test	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.28E-11 cm3/s	10 h	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
69.0 %	70.0 %	86.0 %	

Chemical Oxygen Demand: 1.53 mg/mg
Theoretical Oxygen Demand: 1.68 mg/mg

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
39 %	28 d	OECD 301D Test	fail

Data for Component: **Naphthalene**

Material is expected to be readily biodegradable.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
99.9 %	15.2 d	Other guidelines	Not applicable

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.16E-11 cm3/s	5.9 h	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
57.000 %	71.000 %	71.000 %	

Theoretical Oxygen Demand: 3.00 mg/mg

Bioaccumulative potential

Data for Component: **Acetochlor**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 4.14 Measured
Bioconcentration Factor (BCF): 20

Data for Component: **Clopyralid monoethanolamine salt**

Bioaccumulation: For similar active ingredient(s): Clopyralid. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Data for Component: **Flumetsulam**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): -1.21

Data for Component: **Furilazole**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 2.12 Estimated.

Data for Component: **Propylene glycol**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): -1.07 Measured
Bioconcentration Factor (BCF): 0.09; Estimated.

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

Bioaccumulation: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient, n-octanol/water (log Pow): 2.9 - 6.1 Measured

Data for Component: **Naphthalene**

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient, n-octanol/water (log Pow): 3.3 Measured
Bioconcentration Factor (BCF): 40 - 300; Fish; Measured

Mobility in soil

Data for Component: **Acetochlor**

Mobility in soil: Potential for mobility in soil is medium (Koc between 150 and 500).

Partition coefficient, soil organic carbon/water (Koc): 156 Estimated.
Henry's Law Constant (H): 2.1E-03 Pa*m3/mole.; 25 °C Estimated.

Data for Component: **Clopyralid monoethanolamine salt**

Mobility in soil: For similar active ingredient(s):, Clopyralid., Potential for mobility in soil is very high (Koc between 0 and 50).

Data for Component: **Flumetsulam**

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 15**Henry's Law Constant (H):** 2.64E-14 Pa*m3/mole. Calculated

Data for Component: **Furilazole**

Mobility in soil: Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient, soil organic carbon/water (Koc): 56 - 341**Henry's Law Constant (H):** 9.20E-11 atm*m3/mole Measured

Data for Component: **Propylene glycol**

Mobility in soil: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process., Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): < 1 Estimated.
Henry's Law Constant (H): 1.2E-08 atm*m3/mole Measured

Data for Component: **Solvent naphtha (petroleum), heavy aromatic**

Mobility in soil: No data available.

Data for Component: **Naphthalene**

Mobility in soil: Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient, soil organic carbon/water (Koc): 240 - 1,300 Measured
Henry's Law Constant (H): 2.92E-04 - 5.53E-04 atm*m3/mole; 25 °C Measured
Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
74 %	8.5 %	< 0.01 %	18 %	0.39 %

13. Disposal Considerations

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.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: ACETOCHLOR, FLUMETSULAM
Hazard Class: 9 **ID Number:** UN3082 **Packing Group:** PG III
EMS Number: F-A,S-F
Marine pollutant: Yes

ICAO/IATA

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: ACETOCHLOR, FLUMETSULAM
Hazard Class: 9 **ID Number:** UN3082 **Packing Group:** PG III
Cargo Packing Instruction: 964
Passenger Packing Instruction: 964
Additional Information

MARINE POLLUTANT

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard

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

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Component	CAS #	Amount
Naphthalene	91-20-3	0.1%

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Propylene glycol	57-55-6	8.7%
Solvent naphtha (petroleum), heavy aromatic	64742-94-5	1.5%

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Toxic Substances Control Act (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	0	0

Revision

Identification Number: 1071523 / 1016 / Issue Date 03/17/2014 / Version: 2.0
DAS Code: GF-3005
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

Dow AgroSciences LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided 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 between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.