MONSANTO COMPANY

Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

Warrant® Ultra Herbicide

1.1.1. Chemical name
Not applicable.
1.1.2. Synonyms
None.
1.1.3. EPA Reg. No.
524-620

1.2. Company

MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com

1.3. Emergency numbers

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

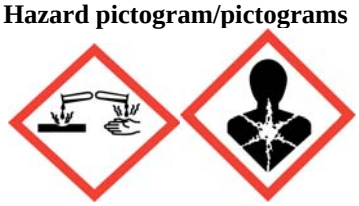
2. HAZARDS IDENTIFICATION

2.1. Classification

OSHA Hazard Communication Standard, 29 CFR 1910.1200 (2012)
Eye damage/irritation - Category 1
Skin sensitization - Category 1
Respiratory sensitization - Category 1
Carcinogenicity - Category 2
STOT RE - Category 2

2.2. Label elements

2.2.1. Signal word
DANGER!
2.2.2. Hazard pictogram/pictograms



2.2.3. Hazard statement/statements
Causes serious eye damage.
May cause an allergic skin reaction.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause damage to kidney, liver, respiratory tract, skin, or eye though prolonged or repeated exposure

Suspected of causing cancer.

2.2.4. Precautionary statement/statements

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing mist, vapours or spray.
Wear protective gloves/protective clothing/eye protection/face protection.
Wear respiratory protection.
Contaminated work clothing should not be allowed out of the workplace.
IF ON SKIN: Wash with plenty of soap and water.
Wash contaminated clothing before reuse.
If skin irritation or rash occurs: get medical advice/attention.
IF INHALED:
If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
If experiencing respiratory symptoms:
Call a POISON CENTER or doctor/physician.
Get medical advice/attention if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.
If exposed or concerned:
Get medical advice/attention.
Store locked up.
Dispose of contents/container in accordance with local, regaional, national and international regulations.

2.3. Appearance and odour (colour/form/odour)

Light yellow /Liquid, Suspension / Paint-like

2.4. OSHA Status

This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Refer to section 11 for toxicological and section 12 for environmental information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

2-chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl) acetamide; {Acetochlor}
Sodium 5-[2-chloro-4-(trifluoromethyl)pehnoxy]-N-(methylsulfonyl)-2-nitrobenzamide; {Fomesafen, sodium salt}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Acetochlor	34256-82-1	30.2
Fomesafen, sodium salt	108731-70-0	7.1
Glycerin	56-81-5	<=7
Hydrocarbon solvent	64742-47-8	<=2
Surfactant(s), water and minor formulating ingredients		<=54

The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

4.1. Description of first aid measures

4.1.1. Eye contact: If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

4.1.2. Skin contact: 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. Sensitized persons should avoid further contact and reuse of contaminated clothing.

4.1.3. Inhalation: If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

4.1.4. Ingestion: Call 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 center or doctor. Do not give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

4.2.1. Eye contact, short term: Risk of serious damage to eyes.

4.2.2. Skin contact, short term: May cause allergic skin reaction.

4.2.3. Inhalation, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.2.4. Single ingestion: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.3. Indication of any immediate medical attention and special treatment neededMedical conditions aggravated by exposure: None.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

5.2. Special hazards

5.2.1. Unusual fire and explosion hazards

Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

5.2.2. Hazardous products of combustion

Carbon monoxide (CO), hydrogen chloride (HCl), nitrogen oxides (NOx), hydrogen fluoride (HF), sulphur oxides (SOx)

5.3. Fire fighting equipment: Self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

5.4. Flash point

Does not flash.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

Use personal protection recommended in section 8.

6.2. Environmental precautions

Minimise spread.

Contain spillage with sand bags or other means.
Keep out of drains, sewers, ditches and water ways.
Do NOT contaminate water when disposing of rinse waters.

6.3. Methods for cleaning up

SMALL QUANTITIES:
Flush spill area with water.
LARGE QUANTITIES:
Absorb in earth, sand or absorbent material.
Dig up heavily contaminated soil.
Collect in containers for disposal.
Flush residues with small quantities of water.
Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.
Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

7.1. Precautions for safe handling

Avoid contact with eyes. Avoid prolonged or repeated contact with skin. When using do not eat, drink or smoke. Wash hands thoroughly after handling or contact. Wash contaminated clothing before re-use. Thoroughly clean equipment after use. Do not contaminate drains, sewers and water ways when disposing of equipment rinse water. Refer to section 13 of the safety data sheet for disposal of rinse water.

7.2. Conditions for safe storage

Minimum storage temperature: 0 °C
Maximum storage temperature: 40 °C
Compatible materials for storage: stainless steel, Heresite[TM]-lined steel, high-density polyethylene (HDPE), polypropylene (PP), Teflon[TM], polyvinylidene difluoride (PVDF)
Incompatible materials for storage: unlined mild steel, aluminium, polyvinyl chloride (PVC), Contact with mild steel may cause color change and reduce product's ability to emulsify with water.
Keep out of reach of children.
Keep away from food, drink and animal feed.
Keep only in the original container.
Keep container tightly closed in a cool, well-ventilated place.
Protect from freezing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Airborne exposure limits

Components	Exposure Guidelines
Acetochlor	No specific occupational exposure limit has been established.
Fomesafen, sodium salt	TLV (ACGIH): No specific occupational exposure limit has been established. PEL (OSHA): No specific occupational exposure limit has been established. Manufacturer suggested exposure limit: 2 mg/m3
Glycerin	PEL (OSHA): 15 mg/m3: total dust, The exposure limit is for mist only. PEL (OSHA): 5 mg/m3: respirable fraction, The exposure limit is for mist only. TLV (ACGIH): No specific occupational exposure limit has been established.
Hydrocarbon solvent	TLV (ACGIH): No specific occupational exposure limit has been established.

	PEL (OSHA): No specific occupational exposure limit has been established. Manufacturer suggested exposure limit: 1,200 mg/m3: 152 ppm: Measured as total hydrocarbon vapor
Surfactant(s), water and minor formulating ingredients	No specific occupational exposure limit has been established.

8.2. Engineering controls: Have eye wash facilities immediately available at locations where eye contact can occur.

8.3. Recommendations for personal protective equipment

8.3.1. Eye protection: If there is potential for contact: Wear chemical goggles.

8.3.2. Skin protection: Wear chemical resistant gloves. If there is significant potential for contact: Wear chemical resistant clothing/footwear.

8.3.3. Respiratory protection: No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Light yellow
Odour:	Paint-like
Form:	Liquid, Suspension
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No data.
Auto ignition temperature:	No data.
Self-accelerating decomposition temperature (SADT):	No data.
Oxidizing properties:	No data.
Specific gravity:	1.1241
Vapour pressure:	No data.
Vapour density:	No data.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.1196 g/cm3
Solubility:	Water: Emulsifies.
pH:	9.1
Partition coefficient:	log Pow: 4.14 @ 20 °C (acetochlor)

10. STABILITY AND REACTIVITY

10.1. Stability

Stable under normal conditions of handling and storage.

10.2. Incompatible materials

unlined mild steel;aluminium;polyvinyl chloride (PVC);Contact with mild steel may cause color change and reduce product's ability to emulsify with water.;
Compatible materials for storage: see section 7.2.

10.3. Hazardous decomposition

Thermal decomposition: Hazardous products of combustion: see section 5.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Likely routes of exposure: Skin contact, eye contact, inhalation, ingestion

Potential health effects

Eye contact, short term: Risk of serious damage to eyes.
Skin contact, short term: May cause allergic skin reaction.
Inhalation, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Single ingestion: Not expected to produce significant adverse effects when recommended use instructions are followed.

Data obtained on product and components are summarized below.

Acute oral toxicity

Rat, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.

Acute dermal toxicity

Rat, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.

Acute inhalation toxicity

Rat, LC50 (limit test), 4 hours, aerosol: > 5.06 mg/L
Practically non-toxic.

Skin irritation

Rabbit, 3 animals:
Days to heal: 3
Primary Irritation Index (PII): 0.7/8.0
Slight irritation.

Eye irritation

Rabbit, 3 animals:
Days to heal: > 21
Moderate irritation.

Skin sensitization

Guinea pig, 3-induction Buehler test:
Positive incidence: 15 %
Positive.

Acetochlor

Genotoxicity
Not genotoxic on the basis of weight of evidence analysis.

Carcinogenicity
Nasal and thyroid tumours in rats. Mode(s) of action not relevant to humans.
Liver tumours in rats and mice. Only above the MTD. Not relevant to humans.
Lung tumours and histiocytic sarcomas in mice. Probably not treatment related.

Reproductive/Developmental Toxicity
Reproductive effects in rats only in the presence of significant maternal toxicity.
Developmental effects in rats only in the presence of significant maternal toxicity.
No developmental effects in rabbits.
Testicular damage in dogs only in the presence of substantial systemic toxicity.

EXPERIENCE WITH HUMAN EXPOSURE
Skin contact, short term, occupational:
Skin effects: sensitization in susceptible individuals

Fomesafen acid

Genotoxicity
Not genotoxic.

Carcinogenicity
Liver tumours in mice. Not relevant to humans.

Reproductive/Developmental Toxicity
Small effect on reproductive performance in rats.

Glycerin

Genotoxicity
Not mutagenic on the basis of weight-of-evidence analysis.

Carcinogenicity
No evidence of carcinogenicity.

Reproductive/Developmental Toxicity
No reproductive effects in rats.
No developmental effects in rabbits.

Hydrocarbon solvent (aliphatic)

EXPERIENCE WITH HUMAN EXPOSURE

Skin contact, repeated, non occupational, occupational:
Skin effects: irritation

Eye contact, , non occupational, occupational:
Eye effects: irritation

Inhalation, excessive, non occupational, occupational:
Gastro-intestinal effects: nausea/vomiting
General/systemic effects: fatigue
Neurological effects: headache, confusion, incoordination, drowsiness, vertigo/dizziness, disturbance of level of consciousness, convulsions

Ingestion, short term, intentional misuse, accidental misuse:
Respiratory effects: pneumonitis (aspiration)
Gastro-intestinal effects: abdominal pain, diarrhoea
Note: May cause effects similar to those described under Inhalation.

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Monsanto has not conducted environmental studies on this product. Data obtained on active ingredient(s) are summarized below.

Acetochlor

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
Acute toxicity, 96 hours, static, LC50: 1.3 mg/L
Moderately toxic.
Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, static, LC50: 0.36 - 1.2 mg/L
Highly toxic.

Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 8.6 - 16 mg/L
Moderately toxic.

Aquatic toxicity, algae/aquatic plants
Green algae (Selenastrum capricornutum):
Acute toxicity, 96 hours, static, EC50: 0.27 - 1.49 µg/L
Very highly toxic.

Avian toxicity
Bobwhite quail (Colinus virginianus):
Acute oral toxicity, single dose, LD50: 928 - 1,560 mg/kg body weight
Mallard duck (Anas platyrhynchos):
Acute oral toxicity, single dose, LD50: > 2,000 mg/kg body weight
Practically non-toxic.

Arthropod toxicity
Honey bee (Apis mellifera):
Oral, 48 hours, LD50: > 100 µg/bee
Practically non-toxic.
Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 200 µg/bee
Practically non-toxic.

Bioaccumulation

Bluegill sunfish (Lepomis macrochirus):
Whole fish: BCF: 20
Rapid depuration after end of exposure.

Dissipation

Water, aerobic, 20 °C:
Half life: 25.9 - 55.1 days

Soil, aerobic, 20 °C:
Half life: 3.4 - 29 days
Koc: 74 - 422

Fomesafen, sodium salt

Classification based on information provided in supplier safety data sheet(s).

Aquatic toxicity, fish

Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, LC50: 680 mg/L
Practically non-toxic.

Aquatic toxicity, invertebrates

Water flea (Daphnia magna):
Acute toxicity, 48 hours, EC50: 294 mg/L
Practically non-toxic.

Avian toxicity

Mallard duck (Anas platyrhynchos):
Acute oral toxicity, single dose, LD50: > 5,000 mg/kg body weight
Practically non-toxic.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

13.1.1. Product

Keep out of drains, sewers, ditches and water ways. Recycle if appropriate facilities/equipment available. Burn in special, controlled high temperature incinerator. Follow all local/regional/national/international regulations.

13.1.2. Container

See the individual container label for disposal information. Emptied containers retain vapour and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Empty packaging completely. Triple or pressure rinse empty containers. Do NOT contaminate water when disposing of rinse waters. Ensure packaging cannot be reused. Do NOT re-use containers. Store for collection by approved waste disposal service. Recycle if appropriate facilities/equipment available. Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

14.1. US Dept. of Transportation (DOT) Hazardous Materials Regulations (49 CFR Parts 105-180)

UN No.:	UN3082
Proper Shipping Name (Technical Name if required):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (acetochlor)
Class:	9

Packing Group:	III

14.1.1. Note

Applies to all bulk shipments.
Not regulated in non-bulk packages.
This product in single or combination packaging with a net quantity per single or inner packaging of 5 liters or less are not regulated for transport.

14.1.2. Special provisions

This material meets the definition of a marine pollutant.

14.2. IMDG Code

UN No.:	UN3082
Proper Shipping Name (Technical Name if required):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (acetochlor)
Class:	9
Packing Group:	III

14.3. IATA/ICAO

UN No.:	UN3082
Proper Shipping Name (Technical Name if required):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (acetochlor)
Class:	9
Packing Group:	III

15. REGULATORY INFORMATION

15.1. Environmental Protection Agency

15.1.1. TSCA Inventory

Exempt

15.1.2. SARA Title III Rules

Section 311/312 Hazard Categories: Immediate
Section 302 Extremely Hazardous Substances: Not applicable.
Section 313 Toxic Chemical(s): Fomesafen, sodium salt

15.1.3. CERCLA Reportable quantity

Not applicable.

15.1.4. Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

DANGER!
CAUSES IRREVERSIBLE EYE DAMAGE, MAY CAUSE ALLERGIC SKIN REACTION

Acute oral toxicity: FIFRA category IV.
Acute dermal toxicity: FIFRA category IV.

Acute inhalation toxicity: FIFRA category IV.
Skin irritation: FIFRA category IV.
Eye irritation: FIFRA category I.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.

	Health	Flammability	Instability	Additional Markings
NFPA	2	0	0	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

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