

MONSANTO COMPANY
Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

Warrant® Herbicide

1.1.1. Chemical name

Not applicable.

1.1.2. Synonyms

None.

1.1.3. EPA Reg. No.

524-591

1.2. Product use

Herbicide

1.3. 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

1.4. 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

Classification according to OSHA Hazard Communication Standard, 29 CFR 1910.1200 (2012)

Skin sensitization - Category 1

Respiratory sensitization - Category 1

STOT SE - Category 3, Respiratory irritant

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

May cause an allergic skin reaction.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause respiratory irritation.
May cause damage to kidney through prolonged or repeated exposure.

2.2.4. Precautionary statement/statements

Do not breathe mist/vapours/spray.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If experiencing respiratory symptoms:
Call a POISON CENTER or doctor/physician.
Get medical advice/attention if you feel unwell.
Wash contaminated clothing before reuse.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container in accordance with local, regional, national and international regulations.
IN CASE OF INADEQUATE VENTILATION:
Wear respiratory protection.

2.3. Other hazards

Not applicable.

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

Whitish /Liquid, (emulsion) / Slight

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 }

Composition

COMPONENT	CAS No.	% by weight (approximate)
Acetochlor	34256-82-1	33.0
Glycerin	56-81-5	<=10.0
Petroleum Distillates Hydrotreated Light	64742-47-8	<=2.0
Water and minor formulating ingredients		<=55.0

The specific chemical identity and/or concentration range 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: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.2.2. Skin contact, short term: May be harmful if absorbed through the skin. May cause allergic skin reaction.

4.2.3. Inhalation, short term: Harmful if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed

4.3.1. Medical 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), Nitrogen oxides (NO_x), Hydrogen chloride (HCl)

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. Environmental precautions

Minimise spread.

Keep out of drains, sewers, ditches and water ways.

6.2. Methods for cleaning up

Contain spillage with sand bags or other means.

Absorb in earth, sand or absorbent material.

Dig up heavily contaminated soil.

Collect in containers for disposal.

Place leaking containers in oversize leakproof drums for transport.

Wash spill area with detergent and water.

Minimise use of water to prevent environmental contamination.

Refer to section 7 for types of containers.

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 prolonged or repeated contact with skin. Avoid breathing vapour or mist. Wash hands thoroughly after handling or contact. When using do not eat, drink or smoke. Wash outside of gloves before removing. 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[™]-lined steel, High-density polyethylene (HDPE), Polypropylene (PP), Teflon[™], 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. Use appropriate containment to avoid environmental contamination. Partial crystallization may occur on prolonged storage below the minimum storage temperature. Protect from freezing.

Minimum shelf life: 2 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Airborne exposure limits

Components	Exposure Guidelines
Acetochlor	No specific occupational exposure limit has been established.
Glycerin	TLV (ACGIH): No specific occupational exposure limit has been established. PEL (OSHA): 15 mg/m ³ : total dust; The exposure limit is for mist only. PEL (OSHA): 5 mg/m ³ : respirable fraction; The exposure limit is for mist only.
Petroleum Distillates Hydrotreated Light	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/m ³ : 152 ppm: Measured as total hydrocarbon vapor
Water and minor formulating ingredients	No specific occupational exposure limit has been established.

8.2. Engineering controls:

Provide local exhaust ventilation.

8.3. Recommendations for personal protective equipment

8.3.1. Eye protection:

No special requirement when used as recommended.

8.3.2. Skin protection:

Wear chemical resistant gloves. Applicators and other handlers must wear: Wear long sleeved shirt, long pants and shoes with socks. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment. If no such instructions for washables, use detergent and hot water. Keep and wash personal protective equipment separately from other laundry.

8.3.3. Respiratory protection:

If airborne exposure is excessive: Wear respirator. Respiratory protection programs must comply with all local/regional/national regulations.

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:	Whitish
Odour:	Slight
Form:	Liquid, (emulsion)
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No explosive properties
Auto ignition temperature:	No data.
Self-accelerating decomposition temperature (SADT):	No data.
Oxidizing properties:	No data.
Specific gravity:	1.102
Vapour pressure:	No significant volatility.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	0.18 Pa.s @ 10 °C; Method: Haake
Kinematic viscosity:	Not applicable.
Density:	1.0919 g/cm ³
Solubility:	Water: Soluble
pH:	9.3
Partition coefficient:	log Pow: 4.14 @ 20 °C (Acetochlor)

10. STABILITY AND REACTIVITY

10.1. Reactivity

Corrosive to mild steel. Corrosive to aluminium.

10.2. Stability

Stable under normal conditions of handling and storage.

10.3. Possibility of hazardous reactions

Corrosive to mild steel. Corrosive to aluminium.

Hazardous polymerization: Does not occur.

10.4. 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.

10.5. Hazardous decomposition

Thermal decomposition: When heated may give off irritant/corrosive fumes.

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

Most important symptoms and effects, both acute and delayed

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

Skin contact, short term: May be harmful if absorbed through the skin. May cause allergic skin reaction.

Inhalation, short term: Harmful if inhaled.

Indication of any immediate medical attention and special treatment needed

Medical conditions aggravated by exposure: None.

Data obtained on product and components are summarized below.

Acute oral toxicity

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

Acute dermal toxicity

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

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol: > 5.11
Practically non-toxic.

Skin irritation

Rabbit, 3 animals:

Days to heal: 0

Primary Irritation Index (PII): 0/8.0

No skin irritation.

Eye irritation

Rabbit, 3 animals:

Days to heal: 2

Slight irritation.

Skin sensitization

Guinea pig, 3-induction Buehler test:

Positive incidence: 25 %

Positive.

Genotoxicity

Not genotoxic.

Acetochlor

Genotoxicity

Not genotoxic on the basis of weight of evidence analysis.

Repeated dose toxicity

Target organs/systems: ; kidneys

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

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.

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.

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: 211 - 397 mg/kg dry soil
Slightly 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

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

13.1.1. Product

Recycle if appropriate facilities/equipment available. Keep out of drains, sewers, ditches and water ways. 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 reuse 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)

Proper Shipping Name (Technical Name if required):	Not regulated for domestic ground transportation. ()
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14.1.1. Special provisions

This material meets the definition of a marine pollutant.

14.2. IMDG Code

14.2.1. Note

Use description for ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

14.3. IATA/ICAO

14.3.1. Note

Use description for ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

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:

See OSHA Hazard Communication Standard Categories in Section 2.1

Section 302 Extremely Hazardous Substances: Not applicable.

Section 313 Toxic Chemical(s): Not applicable.

15.1.3. CERCLA Reportable quantity

Not applicable.

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

This chemical is a pesticide product regulated 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.

CAUTION!
HARMFUL IF ABSORBED THROUGH SKIN
HARMFUL IF INHALED
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 IV.

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.

In this document the British spelling was applied.

|| Significant changes versus previous edition.

	Health	Flammability	Instability	Additional Markings
NFPA	2	1	1	

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), STOT SE (Specific Target Organ Toxicity, Single Exposure), STOT RE (Specific Target Organ Toxicity, Repeated Exposure), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS 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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