

**MONSANTO COMPANY**  
Safety Data Sheet  
Commercial Product

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name**

**Warrant[™] Herbicide**

**EPA Reg. No.**

524-591

**Product use**

Herbicide

**Chemical name**

Not applicable.

**Synonyms**

None.

**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

**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).

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## 2. HAZARDS IDENTIFICATION

**Emergency overview**

**Appearance and odour (colour/form/odour):** Whitish / Liquid / Slight

|| CAUTION!  
|| HARMFUL IF INHALED  
|| HARMFUL IF ABSORBED THROUGH SKIN  
|| MAY CAUSE ALLERGIC SKIN REACTION

**Potential health effects**

**Likely routes of exposure**

|| Skin contact, eye contact, inhalation

**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.

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

**OSHA Status**

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

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## 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
Glycerin	56-81-5	<=15
Surfactant		<=7
Water and minor formulating ingredients		45

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

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**4. FIRST AID MEASURES**

Use personal protection recommended in section 8.

**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.

**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.

**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.

**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.

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**5. FIRE-FIGHTING MEASURES**

**Flash point**

Does not flash.

**Extinguishing media**

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

**Unusual fire and explosion hazards**

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

**Fire fighting equipment**

Self-contained breathing apparatus.  
Equipment should be thoroughly decontaminated after use.

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**6. ACCIDENTAL RELEASE MEASURES**

**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.

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

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## 7. HANDLING AND STORAGE

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

#### 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 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.  
Emptied containers retain vapour and product residue.  
**FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.**

#### 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.  
Use appropriate containment to avoid environmental contamination.  
Partial crystallization may occur on prolonged storage below the minimum storage temperature.  
Protect from freezing.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Airborne exposure limits

Components	Exposure Guidelines
Acetochlor	No specific occupational exposure limit has been established.
Glycerin	TLV (ACGIH): 10 ppm: The exposure limit is for mist only. PEL (OSHA): 15 mg/m <sup>3</sup> : total dust, The exposure limit is for mist only. PEL (OSHA): 5 mg/m <sup>3</sup> : respirable fraction, The exposure limit is for mist only.

Surfactant	No specific occupational exposure limit has been established.
Water and minor formulating ingredients	No specific occupational exposure limit has been established.

#### Engineering controls

Provide local exhaust ventilation.

#### Eye protection

No special requirement when used as recommended.

#### Skin protection

If repeated or prolonged contact:

Wear chemical resistant gloves.

Applicators and other handlers must wear:

Wear long sleeved shirt, long pants and shoes with socks.

#### 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
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.
Specific gravity:	1.1100
Vapour pressure:	No significant volatility.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	0.13 Pa.s @ 10 °C; Method: Haake
Kinematic viscosity:	Not applicable.
Density:	1.1100 g/cm <sup>3</sup>
Solubility:	Water: Completely miscible.
pH:	6.0 - 9.0
Partition coefficient:	log Pow: 4.14 @ 20 °C (acetochlor)

## 10. STABILITY AND REACTIVITY

**Stability**

Stable under normal conditions of handling and storage.

**Oxidizing properties**

No data.

**Materials to avoid/Reactivity**

Corrosive to mild steel.

Corrosive to aluminium.

**Hazardous decomposition**

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

Hazardous products of combustion: see section 5.

**Self-accelerating decomposition temperature (SADT)**

No data.

**Hazardous polymerization**

Does not occur.

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## 11. TOXICOLOGICAL INFORMATION

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

Data obtained on product and components are summarized below.

**Acute oral toxicity**

**Rat, LD50 (Method: Up-and-down procedure (OECD 425)):** > 5,000 mg/kg body weight

Practically non-toxic.

FIFRA category IV.

No mortality.

**Acute dermal toxicity**

**Rat, LD50:** > 5,000 mg/kg body weight

Practically non-toxic.

FIFRA category IV.

No mortality.

**Acute inhalation toxicity**

**Rat, LC50, 4 hours, aerosol:** > 2.00 mg/L

Practically non-toxic.

FIFRA category IV.

No mortality. No toxicity at highest dose tested. For purposes of the inhalation test, product was artificially aerosolized. Since this material will not become aerosolized to a hazardous concentration during transport, it is classified as non-hazardous under the transportation regulations in accordance with 2.6.2.2.4.7(b) and (c) of the UN Recommendations on the Transport of Dangerous Goods. Maximum attainable concentration.

**Skin irritation**

**Rabbit, 3 animals, OECD 404 test:**

Days to heal: 3

Primary Irritation Index (PII): 1.2/8.0

Slight irritation.

FIFRA category IV.

**Eye irritation**

**Rabbit, 3 animals, OECD 405 test:**

Days to heal: 1

Essentially non irritating.

FIFRA category IV.

**Skin sensitization**

**Guinea pig, 3-induction Buehler test:**

Positive incidence: 25 %  
Positive.

### Acetochlor

#### Mutagenicity

##### **In vivo mutagenicity test(s):**

Not mutagenic.

##### **In vitro mutagenicity test(s):**

Mutagenic/Genotoxic in some assays.

#### Repeated dose toxicity

##### **Rat, oral, 90 days:**

NOAEL toxicity: 18 mg/kg body weight/day

Target organs/systems: none

Other effects: decrease of body weight gain, decrease of food consumption

##### **Rabbit, dermal, 21 days:**

NOAEL toxicity: 400 mg/kg body weight/day

Target organs/systems: none

Other effects: increased mortality, decrease of body weight gain

#### Chronic effects/carcinogenicity

##### **Rat, oral, 2 years:**

NOAEL toxicity: 10 mg/kg body weight/day

Target organs/systems: liver, kidneys

Other effects: decrease of body weight gain, organ weight change, blood biochemistry effects

NOEL tumour: 10 mg/kg body weight/day

Tumours: nose, thyroid; Tumours not relevant for man based on mechanistic data.

Tumours: liver; Tumours only above MTD.

##### **Mouse, oral, 18 months:**

NOAEL toxicity: 1.1 mg/kg body weight/day

Target organs/systems: kidneys, liver

Other effects: histopathologic effects, haematological effects, decrease of body weight gain

NOEL tumour: 1.1 mg/kg body weight/day

Tumours: lung, histiocytic sarcoma; Tumours probably not related to treatment.

Tumours: liver; Tumours only above MTD.

#### Toxicity to reproduction/fertility

##### **Rat, oral, 2 generations:**

NOAEL toxicity: 21 mg/kg body weight/day

NOAEL reproduction: 66 mg/kg body weight/day

Target organs/systems in parents: liver, kidneys, thyroid

Other effects in parents: decrease of body weight gain, organ weight change, histopathologic effects

Target organs/systems in pups: none

Other effects in pups: decrease of body weight gain, change in sexual maturation landmarks

Effects on offspring only observed with maternal toxicity.

#### Developmental toxicity/teratogenicity

##### **Rat, oral, 6 - 18 days of gestation:**

NOAEL toxicity: 200 mg/kg body weight

NOAEL development: 400 mg/kg body weight

Target organs/systems in mother animal: none

Other effects in mother animal: decrease of body weight gain

No adverse treatment related effects in offspring.

##### **Rabbit, oral, 7 - 19 days of gestation:**

NOAEL toxicity: 100 mg/kg body weight/day

NOAEL development: 300 mg/kg body weight/day

Target organs/systems in mother animal: none

Other effects in mother animal: decrease of body weight gain

No adverse treatment related effects in offspring.

#### Acute neurotoxicity

**Rat, oral, single dose, gavage:**

NOAEL: 150 mg/kg body weight  
Other effects: decreased activity

**Repeated dose neurotoxicity**

**Rat, oral, 13 weeks, dietary:**

NOAEL: 52 mg/kg body weight/day  
Target organs/systems: none  
Other effects: decrease of body weight gain, decrease of food consumption  
Not neurotoxic.

**EXPERIENCE WITH HUMAN EXPOSURE**

**Skin contact, short term, occupational:**

**Skin effects:** sensitization in susceptible individuals

**Glycerin**

**Mutagenicity**

**In vitro and in vivo mutagenicity test(s):**

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

**Repeated dose toxicity**

**Rat, inhalation, 13 weeks:**

NOAEL toxicity: 165 mg/m<sup>3</sup>  
Target organs/systems: none  
Other effects: local irritation

**Chronic effects/carcinogenicity**

**Rat, oral, 2 years:**

NOAEL toxicity: 10,000 mg/kg body weight/day  
Target organs/systems: none  
Other effects: none  
No evidence of carcinogenicity.

**Toxicity to reproduction/fertility**

**Rat, oral, 2 generations:**

NOAEL toxicity: 2,000 mg/kg body weight/day  
NOAEL reproduction: 2,000 mg/kg body weight/day  
Target organs/systems in parents: none  
Target organs/systems in pups: none

**Developmental toxicity/teratogenicity**

**Rabbit, oral:**

NOAEL toxicity: 1,180 mg/kg body weight/day  
NOAEL development: 1,180 mg/kg body weight/day  
Target organs/systems in mother animal: none  
Other effects in mother animal: none  
Developmental effects: none  
Other effects in foetus: none

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**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.

**Mallard duck (*Anas platyrhynchos*):**

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet

Practically non-toxic.

**Bobwhite quail (*Colinus virginianus*):**

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet

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

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## 13. DISPOSAL CONSIDERATIONS

### 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.

### Container

See the individual container label for disposal information.

Emptied containers retain vapour and product residue.



Observe all labelled 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.

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## 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.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

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## 15. REGULATORY INFORMATION

### TSCA Inventory

Exempt

### OSHA Hazardous Components

Acetochlor  
Glycerin  
Surfactant(s)

### SARA Title III Rules

Section 311/312 Hazard Categories  
|| Immediate, Delayed  
Section 302 Extremely Hazardous Substances  
Not applicable.  
Section 313 Toxic Chemical(s)  
Not applicable.

### CERCLA Reportable quantity

Not applicable.

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## 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), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

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