

**MONSANTO COMPANY**  
Safety Data Sheet  
Commercial Product

## 1. PRODUCT AND COMPANY IDENTIFICATION

### 1.1. Product identifier

#### **HARNESS® Herbicide**

##### 1.1.1. Chemical name

Not applicable.

##### 1.1.2. Synonyms

None.

##### 1.1.3. EPA Reg. No.

524-473

### 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

OSHA Hazard Communication Standard, 29 CFR 1910.1200 (2012)

Acute toxicity, oral - Category 4

Acute toxicity, inhalation - Category 4

Eye damage/irritation - Category 2B

Skin sensitization - Category 1

Aspiration toxicant - 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

Harmful if swallowed.

May be fatal if swallowed and enters airways.  
May cause an allergic skin reaction.  
Causes eye irritation  
Harmful if inhaled.  
Suspected of causing cancer.  
May cause damage to kidney or liver through prolonged or repeated exposure.

#### 2.2.4. Precautionary statement/statements

Do not breathe mist/vapours/spray.  
Do not eat, drink or smoke when using this product.  
Wash thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Contaminated work clothing should not be allowed out of the workplace.  
Wear protective gloves/eye protection.  
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.  
IF ON SKIN: Wash with plenty of soap and water.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Call a POISON CENTER or doctor/physician if you feel unwell.  
Rinse mouth.  
Do NOT induce vomiting.  
If eye irritation persists: Get medical advice/attention.  
Wash contaminated clothing before reuse.  
Store locked up.  
Dispose of contents/container in accordance with local, regional, national and international regulations.

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

Blue-Purple /Liquid, free from foreign materials / Mild, Sweet

#### 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.

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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	75.9
Hydrocarbon solvent (aromatic)	64742-94-5	<=6
Furilazole (Safener)	121776-33-8	<=2.5
2-Methylnaphthalene	91-57-6	<=3
1-Methylnaphthalene	90-12-0	<=2
Naphthalene	91-20-3	<=2
Water and minor formulating ingredients		<=8

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.

#### **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:** Causes moderate but temporary eye irritation.
- 4.2.2. Skin contact, short term:** May cause skin irritation. May cause allergic skin reaction. Harmful in contact with skin.
- 4.2.3. Inhalation, short term:** Harmful by inhalation.
- 4.2.4. Single ingestion:** Harmful if swallowed.

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

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## **5. FIRE-FIGHTING MEASURES**

### **5.1. Extinguishing media**

- 5.1.1. Recommended:** Water, foam, dry chemical, carbon dioxide (CO<sub>2</sub>)

### **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), carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), hydrogen chloride (HCl)

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

### **5.4. Flash point**

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## **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**

SMALL QUANTITIES:  
Absorb in earth, sand or absorbent material.  
LARGE QUANTITIES:

Contain spillage with sand bags or other means.  
Dig up heavily contaminated soil.  
Collect in containers for reclamation or disposal.  
Refer to section 7 for types of containers.  
Wash spill area with detergent and water.  
Minimise use of water to prevent environmental contamination.  
Place leaking containers in oversize leakproof drums for transport.

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, skin and clothing. Avoid breathing vapour or mist. Wash hands thoroughly after handling or contact. When using do not eat, drink or smoke. 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

**Compatible materials for storage:** stainless steel, Heresite[™]-lined steel, aluminium, high-density polyethylene (HDPE), polypropylene (PP), Teflon[™]

**Incompatible materials for storage:** unlined mild steel, 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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Airborne exposure limits

Components	Exposure Guidelines
Acetochlor	No specific occupational exposure limit has been established.
Hydrocarbon solvent (aromatic)	No specific occupational exposure limit has been established.
Furilazole (Safener)	TLV (ACGIH): No specific occupational exposure limit has been established. PEL (OSHA): No specific occupational exposure limit has been established. NCEL (New Chemical Exposure Limit): 0.1 mg/m <sup>3</sup> (TWA)
2-Methylnaphthalene	TLV (ACGIH): 3 mg/m <sup>3</sup> (TWA): 0.5 ppm (TWA): skin, Skin notation means that skin absorption of this material may add to the overall exposure., A4: Not classifiable as a human carcinogen PEL (OSHA): No specific occupational exposure limit has been established.
1-Methylnaphthalene	TLV (ACGIH): 3 mg/m <sup>3</sup> (TWA): 0.5 ppm (TWA): skin, Skin notation means that skin absorption of this material may add to the overall exposure., A4: Not classifiable as a human carcinogen PEL (OSHA): No specific occupational exposure limit has been established.
Naphthalene	TLV (ACGIH): 10 ppm: skin, Skin notation means that skin absorption of this material may add to the overall exposure., A3: Animal carcinogen PEL (OSHA): 10 ppm

Water and minor formulating ingredients	No specific occupational exposure limit has been established.
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**8.2. Engineering controls:** Provide local exhaust ventilation.

**8.3. Recommendations for personal protective equipment**

**8.3.1. Eye protection:** If there is significant 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. Applicators and other handlers must wear: Wear chemical resistant footwear plus socks. Wear long sleeved shirt, long pants and shoes with socks. Wear coveralls over short-sleeved shirt and short pants. 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.

Full facepiece/hood/helmet respirator replaces need for chemical goggles.

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:	Blue - Purple
Odour:	Mild, Sweet
Form:	Liquid, free from foreign materials
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	> 200 °F Method: closed cup
Explosive properties:	No data.
Auto ignition temperature:	No data.
Self-accelerating decomposition temperature (SADT):	No data.
Oxidizing properties:	No data.
Specific gravity:	1.1071 @ 20 °C /@ 15.6 °C
Vapour pressure:	No significant volatility.
Vapour density:	No data.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.1071 g/cm <sup>3</sup> @ 20 °C
Solubility:	Water: Emulsifies.
pH:	Not applicable.
Partition coefficient:	log Pow: 3.03 (acetochlor)

## 10. STABILITY AND REACTIVITY

#### 10.1. Reactivity

Mildly corrosive to mild steel.

#### 10.2. Stability

Stable under normal conditions of handling and storage.

#### 10.3. Possibility of hazardous reactions

Mildly corrosive to mild steel.

**Hazardous polymerization:** No data.

#### 10.4. Incompatible materials

unlined mild steel; 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: Hazardous products of combustion: see section 5.

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## 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:** Causes moderate but temporary eye irritation.

**Skin contact, short term:** May cause skin irritation.

May cause allergic skin reaction.

Harmful in contact with skin.

**Inhalation, short term:** Harmful by inhalation.

**Single ingestion:** Harmful if swallowed.

Data obtained on similar products and on components are summarized below.

#### Similar formulation

##### Acute oral toxicity

**Rat, female, LD50:** 1,849 mg/kg body weight

Slightly toxic.

##### Acute dermal toxicity

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

Practically non-toxic. No mortality.

##### Skin irritation

**Rabbit, 6 animals, OECD 404 test:**

Days to heal: 10

Primary Irritation Index (PII): 3.5/8.0

Moderate irritation.

##### Eye irritation

**Rabbit, 6 animals, OECD 405 test:**

Days to heal: 7

Slight irritation.

##### Acute inhalation toxicity

**Rat, female, LC50, 4 hours, aerosol:** 1.4 mg/L

Slightly toxic.

**Skin sensitization**

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

Positive incidence: 80 %

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

**Hydrocarbon solvent (aromatic)**

**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.

**Furilazole (Safener)**

**Genotoxicity**

Not genotoxic on the basis of weight of evidence analysis.

**Carcinogenicity**

Liver, testes (Leydig cell) and forestomach tumours in rats. Liver and lung tumours in mice. Only at or above MTD. Questionable relevance to humans.

**Reproductive/Developmental Toxicity**

No reproductive effects in rats.

No developmental effects in rabbits.  
Developmental effects in rats only in the presence of maternal toxicity.

### Naphthalene

#### Carcinogenicity

Lung tumours in mice. Nasal tumours in rats.

#### Reproductive/Developmental Toxicity

No developmental effects in rabbits.

### EXPERIENCE WITH HUMAN EXPOSURE

#### Skin contact, repeated, non occupational, occupational:

Skin effects: irritation, sensitization

#### Eye contact, repeated, occupational:

Eye effects: clouding of eye (opacity of cornea)

#### Inhalation, excessive, occupational, non occupational:

Eye effects: eye nerve inflammation (retrobulbar and/or optic neuritis)

Skin effects: yellowing (jaundice)

Gastro-intestinal effects: nausea/vomiting

Urological/renal effects: urinary bladder inflammation (cystitis)

Haematological effects: destruction of red cells (haemolysis), methaemoglobinaemia

Autonomic system effects: increased sweating

Neurological effects: headache, confusion, incoordination, drowsiness, disturbance of level of consciousness, convulsions

Laboratory effects - urinalysis: blood in urine (haematuria)

#### Ingestion, short term, intentional misuse:

Gastro-intestinal effects: abdominal pain

Note: May cause effects similar to those described under Inhalation.

### IARC Classification

Category 2B Chemical(s)

Naphthalene

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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.

#### **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

#### **Furilazole (Safener)**

#### **Aquatic toxicity, fish**

##### **Rainbow trout (*Oncorhynchus mykiss*):**

Acute toxicity, 96 hours, static, LC50: 6.2 mg/L

Moderately toxic.

##### **Bluegill sunfish (*Lepomis macrochirus*):**

Acute toxicity, 96 hours, static, LC50: 4.6 mg/L

Moderately toxic.

#### **Aquatic toxicity, invertebrates**

##### **Water flea (*Daphnia magna*):**

Acute toxicity, 48 hours, static, EC50: 26 mg/L

Slightly toxic.

#### **Aquatic toxicity, algae/aquatic plants**

##### **Green algae (*Selenastrum capricornutum*):**

Acute toxicity, 72 hours, static, EbC50 (biomass): 34.8 mg/L

Slightly toxic.

#### **Avian toxicity**

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

Acute oral toxicity, single dose, LD50: > 2,000 mg/kg body weight

Practically non-toxic.

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

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

Practically non-toxic.

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

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

Practically non-toxic.

**Arthropod toxicity**

**Honey bee (*Apis mellifera*):**

Contact, 48 hours, LD50: > 100 µg/bee

Practically non-toxic.

**Photochemical degradation**

**Water:**

Half life: 30 days

**Dissipation**

**Soil, aerobic, 20 °C:**

Half life: 52 - 78 days

Koc: 56 - 341 L/kg

**Water, aerobic, 20 °C:**

Half life: 6 days

**Biodegradation**

**Manometric respirometry test:**

Degradation: 1 % within 28 days

Not readily biodegradable.

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## 13. DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

#### 13.1.1. Product

Excess product may be disposed of by agricultural use according to label instructions. 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.

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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.

### 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.

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## 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, Delayed

Section 302 Extremely Hazardous Substances: Not applicable.

Section 313 Toxic Chemical(s): Naphthalene

#### 15.1.3. CERCLA Reportable quantity

RQ Component	RQ	Minimum package size containing RQ
naphthalene	100 lb	5,000 lb

Release of more than any reportable quantity to the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).

#### 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.

#### WARNING!

CAUSES SUBSTANTIAL BUT TEMPORARY EYE AND SKIN IRRITATION, HARMFUL IF SWALLOWED, HARMFUL IF INHALED, MAY CAUSE ALLERGIC SKIN REACTION

Acute oral toxicity: FIFRA category III.

Acute dermal toxicity: FIFRA category IV.

Acute inhalation toxicity: FIFRA category III.

Skin irritation: FIFRA category III.

Eye irritation: FIFRA category III.

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

The state of California's Safe Drinking Water and Toxic Enforcement Act of 1986 requires the following label on this product. WARNING! This product contains chemicals known to the state of California to cause cancer.

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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)

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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