

MONSANTO COMPANY
Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name

Intrro® Herbicide

EPA Reg. No.

524-314

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).

2. HAZARDS IDENTIFICATION

Emergency overview

Appearance and odour (colour/form/odour): Blue - Purple / Liquid / Sweet, Aromatic

RESTRICTED USE PESTICIDE due to ground water concerns., The use of this product may be hazardous to your health. This product contains alachlor, which has been determined to cause tumours in laboratory animals.

DANGER!

COMBUSTIBLE LIQUID

CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE

CAUSES SKIN IRRITATION

HARMFUL IF INHALED

HARMFUL IF SWALLOWED

MAY CAUSE ALLERGIC SKIN REACTION

Potential health effects

Likely routes of exposure

Skin contact, eye contact, inhalation

Eye contact, short term

Risk of serious damage to eyes.

Skin contact, short term

Irritating to skin.

May cause allergic skin reaction.

Inhalation, short term

Harmful by inhalation.

Single ingestion

Harmful if swallowed.

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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide; {Alachlor}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Alachlor	15972-60-8	45.1
Monochlorobenzene	108-90-7	>=26 - <=30
Hydrocarbon solvent (aromatic)		>=19 - <=24
Emulsifier		>=4.5 - <=6
Minor formulating ingredients		<=0.05

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.

Eye contact

Hold eye 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 eye. Call a poison control centre 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.

Get medical advice from a poison control center or doctor.

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.

Advice to doctors

This product may pose an aspiration pneumonia hazard. Contains petroleum distillates. Probable mucosal damage may contra-indicate gastric lavage.

5. FIRE-FIGHTING MEASURES

Flash point

102 °F

Method: closed cup

Flash point

39 °C

Method: closed cup

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.

Hazardous products of combustion

Carbon monoxide (CO), hydrogen chloride (HCl), nitrogen oxides (NO_x)

Fire fighting equipment

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protection recommended in section 8.

Environmental precautions

Minimise spread.
Keep out of drains, sewers, ditches and water ways.
Notify authorities.

Methods for cleaning up

Absorb in earth, sand or absorbent material.
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.

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.

Handling

Avoid contact with eyes, skin and clothing.
Avoid breathing vapour or mist.
Do NOT taste or swallow.
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.
Emptied containers retain vapour and product residue.
FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.
DO NOT CUT, DRILL, GRIND OR WELD ON OR NEAR THIS CONTAINER.

Storage

Minimum storage temperature: 32 °F

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

Incompatible materials for storage: mild steel, polyvinyl chloride (PVC), Contact with mild steel may cause color change and reduce product's ability to emulsify with water.

Keep locked up and out of the reach of children.

Keep away from living quarters.

Keep away from food, drink and animal feed.

Keep only in the original container.

Keep away from sources of ignition (sparks, flame, etc.)

Keep container tightly closed in a cool, well-ventilated place.

Protect from frost.

Partial crystallization may occur on prolonged storage below the minimum storage temperature.

Minimum shelf life: 4 years.

If frozen, place in warm room and shake frequently to put back into solution.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Alachlor	MWPEG (Monsanto Workplace Permissible Exposure Limit): 0.11 mg/m ³ (TWA): 10 ppb (TWA) TLV (ACGIH): No specific occupational exposure limit has been established. PEL (OSHA): No specific occupational exposure limit has been established.
Monochlorobenzene	TLV (ACGIH): 10 ppm (TWA) PEL (OSHA): 75 ppm (TWA)
Hydrocarbon solvent (aromatic)	No specific occupational exposure limit has been established.
Emulsifier	No specific occupational exposure limit has been established.
Minor formulating ingredients	No specific occupational exposure limit has been established.

Engineering controls

Provide local exhaust ventilation.

Have eye wash facilities immediately available at locations where eye contact can occur.

Have safety shower available at locations where skin contact can occur.

Eye protection

If there is potential for contact:
Wear chemical goggles.

Skin protection

Wear chemical resistant gloves.

If there is potential for contact:
Wear face shield.

Wear chemical resistant clothing/footwear.

Applicators and other handlers must wear:
Wear coveralls over short-sleeved shirt and short pants.
Wear chemical resistant apron.
Wear chemical resistant footwear plus socks.

Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment.
If no such instructions for washables, use detergent and hot water.

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.

Consult OSHA Standard 29 CFR 1910 to determine required type of equipment for a given application.

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:	Sweet, Aromatic
Form:	Liquid
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	270 °F
Flash point:	102 °F Method: closed cup
	39 °C Method: closed cup
Explosive properties:	No data.
Auto ignition temperature:	No data.
Specific gravity:	1.066 25 °C
Vapour pressure:	6.67 hPa 60 °F
Vapour density:	No data.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.066 g/cm ³ @ 25 °C
Solubility:	Water: Emulsifies.
pH:	Not applicable.
Partition coefficient:	log Pow: 3.3 (alachlor)

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of handling and storage.

Oxidizing properties

No data.

Materials to avoid/Reactivity

Mildly corrosive to mild steel.

Hazardous decomposition

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

When heated may give off toxic fumes.

Self-accelerating decomposition temperature (SADT)

No data.

11. TOXICOLOGICAL INFORMATION

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

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

Similar formulation

Acute oral toxicity

Rat, LD50: 1,782 mg/kg body weight
Slightly toxic.
FIFRA category III.

Acute dermal toxicity

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

Skin irritation

Rabbit, 6 animals, OECD 404 test:
Days to heal: 21
Primary Irritation Index (PII): 6.3/8.0
Other effects: skin blanching
Severe irritation.
FIFRA category II.

Eye irritation

Rabbit, 6 animals, OECD 405 test:
Days to heal: 29
Severe irritation.
FIFRA category I.

Acute inhalation toxicity

Rat, LC50 (limit test), 4 hours, aerosol: > 6.51 mg/L
Practically non-toxic.
FIFRA category IV.
Maximum attainable concentration. No mortality.

Skin sensitization

Guinea pig, 9-induction Buehler test:
Positive incidence: 30 %
Positive.

Mutagenicity

Micronucleus test(s):
Not mutagenic.
Ames test(s):
Not mutagenic without metabolic activation.

Repeated dose toxicity

Rat, inhalation, 1 months:
NOAEL toxicity: < 0.031 mg/L
Target organs/systems: kidneys, liver
Other effects: decrease of body weight gain, organ weight change, local irritation

Alachlor

Mutagenicity

In vitro and in vivo mutagenicity test(s):
Not mutagenic on the basis of weight-of-evidence analysis.

Repeated dose toxicity

Rabbit, dermal, 21 days:
NOAEL toxicity: 1,000 mg/kg body weight/day

Target organs/systems: pituitary
Other effects: organ weight change

Chronic effects/carcinogenicity

Rat, oral, 25 months:

NOAEL toxicity: 2.5 mg/kg body weight/day
Target organs/systems: nose, eyes, liver
Other effects: histopathologic effects, blood biochemistry effects
NOEL tumour: 0.5 mg/kg body weight/day
Tumours: nose
Tumours: stomach
Tumours: thyroid
Tumours not relevant for man based on mechanistic data.

Mouse, oral, 18 months:

NOAEL toxicity: 20 mg/kg body weight/day
Target organs/systems: bone marrow, kidneys, liver
Other effects: decrease of body weight gain, organ weight change, histopathologic effects
NOEL tumour: 331 mg/kg body weight/day
No tumours.

Toxicity to reproduction/fertility

Rat, oral, 3 generations:

NOAEL toxicity: 10 mg/kg body weight/day
NOAEL reproduction: 30 mg/kg body weight
Target organs/systems in parents: kidneys
Other effects in parents: organ weight change
Other effects in pups: none

Developmental toxicity/teratogenicity

Rabbit, oral, 7 - 19 days of gestation:

NOEL toxicity: 100 mg/kg body weight
NOEL development: 150 mg/kg body weight
Other effects in mother animal: weight loss, decrease of food consumption
Developmental effects: none

EXPERIENCE WITH HUMAN EXPOSURE

Eye contact, short term, occupational:

Eye effects: irritation

Monochlorobenzene

Mutagenicity

In vivo mutagenicity test(s):

Not mutagenic.

Repeated dose toxicity

Rat, inhalation, 120 days:

NOAEL toxicity: < 75 ppm
Target organs/systems: liver
Other effects: histopathologic effects, blood biochemistry effects

Chronic effects/carcinogenicity

Rat, oral, 103 weeks:

NOAEL toxicity: 60 mg/kg body weight/day
Target organs/systems: liver
NOEL tumour: 60 mg/kg body weight/day
Tumours: liver, (neoplasia)

Mouse, oral, 103 weeks:

NOAEL toxicity: 120 mg/kg body weight/day
Target organs/systems: none
NOEL tumour: > 120 mg/kg body weight/day
No tumours.

Toxicity to reproduction/fertility

Rat, inhalation, 2 generations:

NOAEL toxicity: 50 ppm
NOAEL reproduction: 450 ppm
Target organs/systems in parents: liver, kidneys
Other effects in parents: histopathologic effects
Target organs/systems in pups: none
Other effects in pups: none

Developmental toxicity/teratogenicity

Rabbit, inhalation, 6 - 18 days of gestation:

LOAEL toxicity: 590 ppm
NOAEL development: 590 ppm
Target organs/systems in mother animal: liver
Other effects in mother animal: organ weight change
Developmental effects: none

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.

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.

12. ECOLOGICAL INFORMATION

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

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

Similar formulation

Aquatic toxicity, fish

Rainbow trout (*Oncorhynchus mykiss*):

Acute toxicity, 96 hours, static, LC50: 3.7 mg/L
Moderately toxic.

Bluegill sunfish (*Lepomis macrochirus*):

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

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*):

Acute toxicity, 48 hours, static, LC50: 22 mg/L
Slightly toxic.

Similar formulation

Aquatic toxicity, algae/aquatic plants

Green algae (*Selenastrum capricornutum*):

Acute toxicity, 72 hours, static, EC50: 0.0059 mg/L
Algistatic effect observed. Effect reversible.
Very highly toxic.

Diatom (*Skeletonema costatum*):

Acute toxicity, 96 hours, static, EC50: 0.377 mg/L
Algistatic effect observed. Effect reversible.
Highly toxic.

Arthropod toxicity

Honey bee (*Apis mellifera*):

Contact, 48 hours, LD50: > 232 µg/bee
Practically non-toxic.

Honey bee (*Apis mellifera*):

Oral, 48 hours, LD50: > 214 µg/bee
Practically non-toxic.

Alachlor

Avian toxicity

Bobwhite quail (*Colinus virginianus*):

Acute oral toxicity, single dose, LD50: 1,536 mg/kg body weight
Slightly 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.

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: 387 mg/kg dry soil
Slightly toxic.

Bioaccumulation

Bluegill sunfish (*Lepomis macrochirus*):

Whole fish: BCF: 50

Hydrolysis

25.00 °C, pH 6:

0 % within 30 days

Photochemical degradation

Soil:

Half life: 144.4 days

Dissipation

Soil, aerobic:

Half life: 8 - 17 days

Koc: 131 - 192

Water, aerobic:

Half life: 23 days

13. DISPOSAL CONSIDERATIONS

Product

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

Recycle if appropriate facilities/equipment available.

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

For other disposal, this product is classified as hazardous by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261, due to its toxicity and ignitability characteristics.

Burn in a RCRA approved incinerator.

Follow all local/regional/national/international regulations.

Container

See the individual container label for disposal information.

Empty packaging completely.

Triple or pressure rinse empty containers.

Do NOT contaminate water when disposing of rinse waters.

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

For other disposal, rinsate is classified as hazardous by the Resource Conservation and Recovery Act (RCRA), 40 CFR 261, due to its toxicity characteristic.

Burn in a RCRA approved incinerator.

Ensure packaging cannot be reused.

Store for collection by approved waste disposal service.

Recycle if appropriate facilities/equipment available.

Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.

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.

US DOT basic description and technical name

NA1993, COMPOUND, WEED KILLING, LIQUID (chlorobenzene, petroleum naphtha), COMBUSTIBLE LIQUID, III

Note

Applies to all bulk packages and to non-bulk packages which contain an RQ.

US DOT Reportable quantity

RQ Component	RQ	Minimum package size containing RQ
chlorobenzene	100 lb	370 lb

Special provisions

This material meets the definition of a marine pollutant.

IMDG Code

Use description for flammable liquid, n.o.s.

IATA/ICAO

Use description for flammable liquid, n.o.s.

15. REGULATORY INFORMATION

TSCA Inventory

All components are on the US EPA's TSCA Inventory

OSHA Hazardous Components

- Alachlor
- Monochlorobenzene
- 1,2,4-Trimethylbenzene
- Emulsifier
- Pro-Ized Blue Seed Colorant

SARA Title III Rules

- Section 311/312 Hazard Categories
Immediate, Delayed, Fire
- Section 302 Extremely Hazardous Substances
Not applicable.
- Section 313 Toxic Chemical(s)
Alachlor, chlorobenzene, 1,2,4-trimethylbenzene

CERCLA Reportable quantity

RQ Component	RQ	Minimum package size containing RQ
chlorobenzene	100 lb	370 lb
xylene	100 lb	10,000 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).

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.

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	3	2	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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