



PROGRASS® HERBICIDE

MSDS Version 2.3

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

| | |
|--------------------------------|--|
| Product Name | PROGRASS® HERBICIDE |
| Chemical Name | 2-ethoxy-2,3-dihydro-3,3-dimethyl-5- benzofuranyl methanesulfonate (active ingredient) |
| Synonym | CR 14080 |
| MSDS Number | 136 |
| Chemical Family | |
| Chemical Formulation | Mixture (active ingredient: C13H18O5S) |
| EPA Registration No. | 432-941 |
| Canadian Registrat. No. | |

Bayer Environmental Science
 2 T.W. Alexander Drive
 Research Triangle PK, NC 27709
 USA

For MEDICAL, TRANSPORTATION or Other EMERGENCY call 1-800-334-7577 24 hours/day
 For Product Information call 1-800-331-2867

Product Use Description Selective herbicide for use by professional applicators on ornamental turf only.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

| <u>Component Name</u> | <u>CAS No.</u> | <u>Concentration % by Weight</u> | |
|-------------------------------|----------------|----------------------------------|----------------|
| | | <u>Minimum</u> | <u>Maximum</u> |
| Ethofumesate | 26225-79-6 | 19.0000 | |
| Inert ingredients, including: | | 81.0000 | |
| Xylene | 1330-20-7 | | <60.0000 |
| Cyclohexanone | 108-94-1 | | |
| Ethyl benzene | 100-41-4 | | |

INERT INGREDIENTS (81.0%): Only the regulated ingredients are listed above. For additional information, refer to Section 15 (Regulatory Information).

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SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview

Danger! Keep out of the reach of children. Hazard to humans and domestic animals. Corrosive - causes irreversible eye damage. Do not get in eyes or on clothing. Harmful if absorbed through the skin. Avoid contact with skin.

Physical State

liquid

Odor

Aromatic hydrocarbon odor

Appearance

Straw-colored

Routes of Exposure

Skin contact. Vapor/mist inhalation.

Immediate Effects

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye

Corrosive. Causes eye damage. The solvent vapor can be a mild eye irritant. Use proper protective eyewear during handling/use (See Section 8).

Skin

May be harmful if absorbed through skin. Repeated skin contact removes skin oil, possibly leading to irritation and aggravation of an existing dermatitis. Repeated contact may sensitize the skin, leading to allergic reactions.

Ingestion

May be harmful if swallowed. No specific health effects are known for ingestion of a small amount incidental to routine handling and use.

Inhalation

Prolonged inhalation of high vapor concentrations may cause drowsiness and dizziness.

Chronic or Delayed Long-Term

No component of this product is listed as a carcinogen by NTP, IARC, or OSHA.

Medical Conditions Aggravated by Exposure

Repeated and prolonged skin contact can aggravate pre-existing dermatitis (irritating or/and inflammatory skin conditions).

Signs and Symptoms

High concentrations of solvent vapor may cause dizziness, drowsiness, weakness and incoordination.

SECTION 4. FIRST AID MEASURES

Eye

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 center or doctor for treatment advice.

Skin

Take off contaminated clothing. Rinse skin immediately with plenty of water for

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15-20 minutes. Call a poison control center or doctor for treatment advice.

Ingestion Call a poison control center or doctor immediately for treatment advice. Have a person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Note to Physician If swallowed, give gastric lavage. Avoid aspiration (contains xylene).

SECTION 5. FIRE FIGHTING MEASURES

Flash Point 29 °C / 84 °F
(Flammable) P.M.C.C.
Flammability class: 1-C* (Classified by NFPA Standards)

Fire and Explosion Hazards Highly flammable liquid.

Suitable Extinguishing Media dry chemical, foam, water

Fire Fighting Instructions Wear self-contained breathing apparatus. Do not breathe fumes or vapor.

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with Federal or local disposal regulations. Notify the appropriate authorities immediately.

(*Must refer to Section 15 for applicable Reportable Quantity (RQ) and other federal or regulatory information; *Prograss contains CERCLA and RCRA regulated inert ingredients).

Land Spill or Leaks Stop leak if it can be done without risk. Take up with sand or other non-combustible material and place into a clean container for later disposal. Report immediately to authorities if liquid enters watercourse or sewer.

SECTION 7. HANDLING AND STORAGE

Handling Procedures Danger! Flammable liquid. Corrosive. Causes eye damage. Do not get in eyes. Avoid contact with skin.

Do not use, pour, spill or store near heat or open flame.

Storing Procedures Do not contaminate water, food, or feed by storage or disposal. Store in areas

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designated for highly flammable liquids.

Work/Hygienic Procedures

Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this products concentrate.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this products concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Do not apply this product through any type of irrigation system. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

Min/Max Storage Temperatures

1 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Control airborne concentrations below the exposure guidelines. Use with adequate ventilation. Local exhaust ventilation may be necessary, when used in a confined area.

When handlers used closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [(40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Eye/Face Protection

goggles or face-shield

Body Protection

Applicators and other handlers must wear: Long-sleeved shirt and long pants
Chemical resistant gloves, such as barrier laminate, or Vitron \geq 14 mils shoes plus socks protective eyewear.

Respiratory Protection

Ensure adequate ventilation. If not adequate, use a chemical cartridge-type respirator approved by the National Institute of Occupational Health and Safety.

NOTE TO APPLICATORS AND HANDLERS:

For agricultural products which are within the scope of the EPA Worker

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Protection Standards (WPS) (40 CFR Part 170), all users must refer to the statement below or the Product Label for WPS-specified Personal Protective Equipment (PPE), Restricted Entry Interval (REI), and other Precautionary Statements.

For non-agricultural uses that are not within the scope of the Worker Protection Standard for agricultural pesticides, the Personal Protection Equipment recommendations are identical to that listed for WPS.

If you want more options to the PPE listed below, follow instructions for category "G" on an EPA chemical-resistance category selection chart.

PERSONAL PROTECTIVE EQUIPMENT FOR APPLICATORS AND HANDLERS: (FOR AGRICULTURAL AND NON-AGRICULTURAL USES.)

Applicators and handlers must wear:

- Long-sleeve shirt and long pants.
- Chemical-resistant gloves such as barrier laminate or Viton.
- Shoes plus socks
- Protective eyewear.

FOR AGRICULTURAL USES ONLY:

PERSONAL PROTECTIVE EQUIPMENT REQUIRED FOR EARLY ENTRY INTO TREATED AREAS:

For entry into treated area during the restricted entry interval (REI) of 12 hours that involves contact with anything that has been treated such as plants, soil, or water, the PPE required is:

- Coveralls over short-sleeved shirt and short pants.
- Chemical-resistant gloves such as barrier laminate or viton.
- Shoes plus socks.
- Protective eyewear for overhead exposure.

Exposure Limits

| | | | | | |
|--------|-----------|-----------|---------|---------|-----------|
| Xylene | 1330-20-7 | OSHA Z1 | PEL | 100 ppm | 435 mg/m3 |
| | | OSHA Z1A | TWA | 100 ppm | 435 mg/m3 |
| | | OSHA Z1A | STEL | 150 ppm | 655 mg/m3 |
| | | US CA OEL | TWA PEL | 100 ppm | 435 mg/m3 |
| | | US CA OEL | Ceiling | | 300 ppm |
| | | US CA OEL | STEL | 150 ppm | 655 mg/m3 |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 150 ppm | 655 mg/m3 |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 150 ppm | 655 mg/m3 |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 150 ppm | 655 mg/m3 |
| | | ACGIH | TWA | | 100 ppm |
| | | ACGIH | STEL | | 150 ppm |

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| | | | | | |
|---------------|----------|-----------|---------|---------|-----------|
| Cyclohexanone | 108-94-1 | ACGIH | TWA | | 25 ppm |
| | | NIOSH | REL | 25 ppm | 100 mg/m3 |
| | | OSHA Z1 | PEL | 50 ppm | 200 mg/m3 |
| | | OSHA Z1A | TWA | 25 ppm | 100 mg/m3 |
| | | US CA OEL | TWA PEL | 25 ppm | 100 mg/m3 |
| | | ACGIH NIC | TWA | | 20 ppm |
| Ethyl benzene | 100-41-4 | ACGIH NIC | STEL | | 50 ppm |
| | | ACGIH | TWA | | 100 ppm |
| | | ACGIH | STEL | | 125 ppm |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 125 ppm | 545 mg/m3 |
| | | OSHA Z1 | PEL | 100 ppm | 435 mg/m3 |
| | | OSHA Z1A | TWA | 100 ppm | 435 mg/m3 |
| | | OSHA Z1A | STEL | 125 ppm | 545 mg/m3 |
| | | US CA OEL | TWA PEL | 100 ppm | 435 mg/m3 |
| | | US CA OEL | STEL | 125 ppm | 545 mg/m3 |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|-------------------------|--|
| Appearance | Straw-colored |
| Physical State | liquid |
| Odor | Aromatic hydrocarbon odor |
| Vapor Pressure | Xylene (19 mmHg); Cyclohexanone (3.95 mmHg) |
| Specific Gravity | 0.95 |

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Boiling Point 137 °C
(Xylene)

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability Stable

Hazardous Polymerization (Conditions to avoid) Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity Rat: LD50: 5,560 mg/kg
Low toxicity.

Acute Dermal Toxicity Rat: LD50: > 4,000 mg/kg
Low toxicity.

Acute Inhalation Toxicity No data is available for this formulated product.

However, the LC50 (mix) can be calculated from the available LC50 (rat) data for the volatile solvents (xylene & cyclohexanone; inert ingredients).
The calculated LC50 (mix) for Prograss is estimated to be:
> 10.0 mg/L (low toxicity)

Skin Irritation Harmful if absorbed through the skin. A mild skin irritant on brief contact. Prolonged contact removes skin oils and causes irritation. Repeated contacts may sensitize the skin, leading to allergic reactions.

Eye Irritation Corrosive to eyes.
Causes irreversible eye damage when prolonged contact had occurred.

The studies reported below were carried out with Ethofumesate technical (97.4% ethofumesate), the active ingredient of this product.

Sub-Chronic Toxicity Results from 90-day animal studies suggest no target organ effects under the recommended conditions for normal handling and use.

Chronic Toxicity In two-year feeding studies with animals, adverse effects were only observed at very high doses. These include: a reduced weight gain in males and increased liver weight in females (rats, 5,000 ppm); an increased liver weight in females (hamsters, 2,000 ppm); an increased liver weight in both males and females (dogs, 20,000 ppm).

The inert ingredient cyclohexanone is listed by IARC as a Group 3 substance: Not classifiable as human carcinogen (group 3); human evidence is no adequate data; animal evidence is inadequate. Cyclohexanone is also listed as a NTP

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Testing Program substance.

Assessment Carcinogenicity

ACGIH

| | | |
|---------------|-----------|----------|
| Xylene | 1330-20-7 | Group A4 |
| Cyclohexanone | 108-94-1 | Group A4 |
| Ethyl benzene | 100-41-4 | Group A3 |

NTP

None

IARC

| | | |
|---------------|-----------|----|
| Xylene | 1330-20-7 | 3 |
| Cyclohexanone | 108-94-1 | 3 |
| Ethyl benzene | 100-41-4 | 2B |

OSHA

None

Reproductive & Developmental Toxicity

Ethofumesate showed no adverse effects in a three-generation rat study.

Teratogenicity

Ethofumesate had no teratogenic effects in rats at dose levels up to 80 mg/kg/day. In rabbits, no adverse effects of biological significance were observed at the low dose (30 mg/kg/day); slight embryo-lethal effects were noted at 300 mg/kg/day; severe maternal toxicity and moderate embryo-lethal effects were observed at the highest dose (3,000 mg/kg/day). No malformations were observed even at the highest dose.

Mutagenicity

Ethofumesate was not mutagenic or genotoxic when tested in the Ames gene mutation assay and in four other mutagenesis systems.

SECTION 12. ECOLOGICAL INFORMATION

Environmental Precautions

For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below mean high water mark. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water when disposing of equipment washwaters.

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SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance

Handling and disposal of pesticide wastes must be in accordance with the requirements under the Resource and Recovery Act (RCRA) and applicable state and local procedures. Please be advised that the state and local requirements may be more restrictive or otherwise different from the federal regulations

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal

Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Do not reuse empty container.

RCRA Classification

1330-20-7 Xylene

US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U239

SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: Compound, weed killing, liquid (contains Cyclohexanone and Xylene), 3, NA1993, PG III, * (* Insert net volume)

DOT SHIPPING LABEL: Flammable Liquid

FREIGHT CLASSIFICATION: Compound, weed killing, N.O.I.

NOTE: For the 4 x 1 gallon package, mark Limited Quantity.

SECTION 15. REGULATORY INFORMATION

US Federal Regulations

| | |
|----------------------|-----------|
| EPA Registration No. | 432-941 |
| TSCA list | |
| Xylene | 1330-20-7 |
| Cyclohexanone | 108-94-1 |
| Ethyl benzene | 100-41-4 |

TSCA 12b export notification

None

SARA Title III - section 302 - notification and information

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None

SARA Title III - section 313 - toxic chemical release reporting

| | | |
|---------------|-----------|------|
| Xylene | 1330-20-7 | 1.0% |
| Ethyl benzene | 100-41-4 | 1.0% |

US States Regulatory Reporting

CA Prop65

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State right-to-know ingredients

| | | |
|---------------|-----------|--------------------------------|
| Xylene | 1330-20-7 | CA, CT, IL, MI, MN, NJ, PA, RI |
| Cyclohexanone | 108-94-1 | CA, CT, IL, MN, NJ, PA, RI |
| Ethyl benzene | 100-41-4 | CA, CT, IL, MN, NJ, PA, RI |

Canadian Regulations

Canadian Registrat. No.

Canadian Domestic Substance List

| | |
|---------------|-----------|
| Xylene | 1330-20-7 |
| Cyclohexanone | 108-94-1 |
| Ethyl benzene | 100-41-4 |

Environmental

CERCLA

| | | |
|---------------|-----------|-----------|
| Xylene | 1330-20-7 | 100 lbs |
| Cyclohexanone | 108-94-1 | 5,000 lbs |
| Ethyl benzene | 100-41-4 | 1,000 lbs |

Clean Water Section 307 Priority Pollutants

| | |
|---------------|----------|
| Ethyl benzene | 100-41-4 |
|---------------|----------|

Safe Drinking Water Act Maximum Contaminant Levels

| | |
|---------------|-----------|
| Xylene | 1330-20-7 |
| Ethyl benzene | 100-41-4 |

International Regulations

EU Classification

| | | |
|--------------|---|-------------------------------|
| Ethofumesate | 26225-79-6 | Dangerous for the environment |
| R Phrases | Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. | |
| S Phrases | Avoid release to the environment. Refer to special instructions/safety data sheets. | |
| Xylene | 1330-20-7 | Harmful |
| R Phrases | Flammable. Harmful by inhalation and in contact with skin. Irritating to skin. | |
| S Phrases | Keep out of the reach of children. Avoid contact with the eyes. | |

European Inventory of Existing Commercial Substances (EINECS)

| | |
|--------------|------------|
| Ethofumesate | 26225-79-6 |
|--------------|------------|

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| | |
|---------------|-----------|
| Xylene | 1330-20-7 |
| Cyclohexanone | 108-94-1 |
| Ethyl benzene | 100-41-4 |

SECTION 16. OTHER INFORMATION

| | Health | Flammability | Reactivity | Others |
|------|--------|--------------|------------|--------|
| HMIS | 3 | 3 | 0 | H |
| NFPA | 3 | 3 | 0 | none |

REVISED SECTIONS:

MSDS REVISION INDICATOR: Company name change.

Print Date: 01/13/2005

Supersedes MSDS, which is older than: 01/23/2003

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