PROGRASS® HERBICIDE

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Product Name**
PROGRASS® HERBICIDE

**MSDS Number**
102000000915

**EPA Registration No.**
432-941

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

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

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Component Name</th>
<th>CAS-No.</th>
<th>Average % by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethofumesate</td>
<td>26225-79-6</td>
<td>19.00</td>
</tr>
<tr>
<td>Cyclohexanone</td>
<td>108-94-1</td>
<td>15.00</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>59.50</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>0.164</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3. HAZARDS IDENTIFICATION

**Emergency Overview**
Danger! Corrosive - causes irreversible eye damage. Do not get in eyes or on clothing. Harmful if absorbed through skin. Avoid contact with skin. Avoid inhalation of vapour or mist.

**Physical State**
liquid clear

**Odor**
aromatic

**Appearance**
brown

**Routes of Exposure**
Eye contact, Skin Absorption, Inhalation, Ingestion

**Immediate Effects**
Eye
Corrosive - causes irreversible eye damage. Vapors may cause eye irritation. Do not get in eyes.
Material Safety Data Sheet
PROGRASS® HERBICIDE

Skin
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product. Repeated contact may sensitize the skin, leading to allergic reactions. May be harmful if absorbed through skin. Avoid contact with skin and clothing.

Ingestion
May be harmful if swallowed. Do not take internally.

Inhalation
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Avoid inhalation of vapour or mist.

Chronic or Delayed Long-Term
This product or its components may have target organ effects. This product or its components may have long term (chronic) health effects. This product contains ingredients that are considered to be probable or suspected human carcinogens (see Section 11 - Chronic).

Medical Conditions Aggravated by Exposure
Skin contact may aggravate existing skin disease. Individuals with allergic history or pre-existing dermatitis should use extra care in handling this product.

SECTION 4. FIRST AID MEASURES

General
When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

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 physician or poison control center immediately.

Skin
Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person.

Inhalation
Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Notes to Physician

Signs and Symptoms
Local:
severe irritation

Systemic:
To date no symptoms are known.

Treatment
There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.
### SECTION 5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>29 °C / 84 °F</td>
<td></td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>&gt; 480 °C / &gt; 896 °F</td>
<td>The data relate to the solvent.</td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>1.1 %(V)</td>
<td>The data relate to the solvent.</td>
</tr>
<tr>
<td>Upper Flammability Limit</td>
<td>6.6 %(V)</td>
<td>The data relate to the solvent.</td>
</tr>
<tr>
<td>Fire and Explosion Hazards</td>
<td></td>
<td>The product is extremely flammable. In case of fire the evolution of dangerous gases is possible.</td>
</tr>
<tr>
<td>Suitable Extinguishing Media</td>
<td></td>
<td>Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.</td>
</tr>
<tr>
<td>Unsuitable Extinguishing media</td>
<td></td>
<td>high volume water jet</td>
</tr>
<tr>
<td>Fire Fighting Instructions</td>
<td></td>
<td>Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Whenever possible, contain fire-fighting water by diking area with sand or earth. In the event of fire and/or explosion do not breathe fumes. Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.</td>
</tr>
</tbody>
</table>

### SECTION 6. ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Precaution</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Precautions</td>
<td>Keep people away from and upwind of spill/leak. Avoid contact with spilled product or contaminated surfaces. When dealing with a spillage do not eat, drink or smoke.</td>
</tr>
<tr>
<td>Methods for Cleaning Up</td>
<td>Take up with absorbent material (e.g. sand, diatomaceous earth or a proprietary absorbent material). Pick up and fill the product into a tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.</td>
</tr>
<tr>
<td>Additional Advice</td>
<td>Use personal protective equipment. Do not allow product to enter streams, sewers or other waterways. Do not allow product to contact vegetation.</td>
</tr>
</tbody>
</table>
SECTION 7. HANDLING AND STORAGE

Handling Procedures
No specific precautions required when handling unopened packs/containers; follow relevant manual handling advice. Use only in area provided with appropriate exhaust ventilation.

Storing Procedures
Keep containers tightly closed in a cool, well-ventilated place. Store in a place accessible by authorized persons only. Keep away from direct sunlight. Protect against frost.

Work/Hygienic Procedures
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

Take off contaminated clothing and shoes immediately. Then wash thoroughly and put on clean clothing.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. As soon as practical, wash thoroughly and change into clean clothing.

Min/Max Storage Temperatures
Do not transport or store below 1 °C / 34 °F

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection
Follow all label instructions. Train employees in safe use of the product.

Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

Engineering Controls
Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Eye/Face Protection
Chemical resistant goggles must be worn.

Hand Protection
Chemical-resistant gloves (barrier laminate, butyl rubber, nitrile rubber or Viton)

Body Protection
Wear long-sleeved shirt and long pants and shoes plus socks.

Respiratory Protection
When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

Exposure Limits

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS No.</th>
<th>ACGIH TWA</th>
<th>ACGIH STEL</th>
<th>PPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexanone</td>
<td>108-94-1</td>
<td>20 ppm</td>
<td>50 ppm</td>
<td></td>
</tr>
</tbody>
</table>
### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Component</th>
<th><strong>Appearance</strong></th>
<th><strong>Physical State</strong></th>
<th><strong>Odor</strong></th>
<th><strong>Vapor Pressure</strong></th>
<th><strong>Vapor Density (Air = 1)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>brown</td>
<td>liquid clear</td>
<td>aromatic</td>
<td>10 mbar / 7.5 mm Hg at 20 °C</td>
<td>3.7</td>
</tr>
</tbody>
</table>
The data relate to the solvent.

Density
\[ \text{ca. } 0.95 \text{ g/cm}^3 \text{ at } 20 \degree \text{C} \]

Water solubility
miscible

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability
Stable under recommended storage conditions.

Conditions to Avoid
Extremes of temperature and direct sunlight.
Heat, flames and sparks.

Incompatibility
None known.

SECTION 11. TOXICOLOGICAL INFORMATION

The acute LC50 study was bridged from the technical-grade active ingredient, Ethofumesate. The remaining acute toxicity data have been bridged from a similar formulation containing a similar percentage of Ethofumesate. The non-acute information pertains to the technical-grade active ingredient.

Acute Oral Toxicity
male rat: LD50: > 5,660 mg/kg

Acute Dermal Toxicity
male rat: LD50: > 4,000 mg/kg

Acute Inhalation Toxicity
male/female rat: LC50: > 5.4 mg/l
Exposure time: 4 h
Determined in the form of liquid aerosol.

male/female rat: LC50: > 21.6 mg/l
Exposure time: 1 h
Determined in the form of liquid aerosol.
Extrapolated from the 4 hr LC50.

Skin Irritation
rabbit: Slight irritation.

Eye Irritation
rabbit: Corrosive eye irritant.

Chronic Toxicity
Ethofumesate caused decreased body weight gains and/or liver effects in chronic studies in rats and dogs.

Assessment Carcinogenicity
Ethofumesate has been classified by EPA as "not likely to be carcinogenic to humans" based on the lack of carcinogenicity in mice, the lack of convincing evidence for carcinogenicity in the rat, and no evidence of genotoxicity.

ACGIH
Cyclohexanone 108-94-1 Group A4
PROGRESS® HERBICIDE

Xylene 1330-20-7 Group A4
Naphthalene 91-20-3 Group A4
Ethylbenzene 100-41-4 Group A3
NTP
Naphthalene 91-20-3
IARC
Cyclohexanone 108-94-1 Overall evaluation: 3
Xylene 1330-20-7 Overall evaluation: 3
Naphthalene 91-20-3 Overall evaluation: 2B
Ethylbenzene 100-41-4 Overall evaluation: 2B
OSHA
None.

Reproductive & Developmental Toxicity

REPRODUCTION: Ethofumesate demonstrated no adverse effects on reproduction in a three-generation rat study.

DEVELOPMENTAL TOXICITY: Ethofumesate was not a developmental toxicant in rats. In rabbits, developmental effects (e.g. incomplete ossifications) were observed at a non-maternally toxic dose. No malformations were observed even at the highest dose.

Neurotoxicity

Ethofumesate did not demonstrate the potential to cause neurotoxicity in standard toxicity studies using mice, rats, rabbits and dogs.

Mutagenicity

Ethofumesate was not mutagenic or genotoxic in a battery of in vitro and in vivo mutagenicity studies.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity to Fish

Brachidanio rerio
LC50: 45 mg/l
Exposure time: 96 h

Toxicity to Aquatic Plants

Scenedesmus subspicatus
IC50: 3.9 mg/l
Exposure time: 72 h
The value mentioned relates to the active ingredient ethofumesate.

Acute Toxicity to Aquatic Invertebrates

Water flea (Daphnia magna)
EC50: 93.2 mg/l
Exposure time: 48 h
Test conducted with a similar formulation.

Bioaccumulation

Bluegill sunfish BCF: 67 - 144
The value mentioned relates to the active ingredient ethofumesate.
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 runoff or drift. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Apply this product as specified on the label.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance

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

Do not re-use empty containers. Triple rinse containers. Puncture container to avoid re-use. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke.

RCRA Classification

The RCRA Classifications may be on the individual component(s) and not necessarily on the product as a whole.

108-94-1 Cyclohexanone

108-94-1 Cyclohexanone

1330-20-7 Xylene

91-20-3 Naphthalene

91-20-3 Naphthalene

100-41-4 Ethylbenzene
SECTION 14. TRANSPORT INFORMATION

TRANSPORTATION CLASSIFICATION:
Flammable Liquid, N.O.S. (Cyclohexanone, Xylene) // 3 // UN1993 // PG III

FREIGHT CLASSIFICATION:
Compounds, Tree or Weedkilling, N.O.I., other than poison, having a density of 20 lbs or greater per cubic foot

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 432-941

US Federal Regulations

TSCA list
- Cyclohexanone 108-94-1
- Xylene 1330-20-7
- Naphthalene 91-20-3
- Ethylbenzene 100-41-4

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
- Xylene 1330-20-7
- Naphthalene 91-20-3

SARA Title III - Section 302 - Notification and Information
None.

SARA Title III - Section 313 - Toxic Chemical Release Reporting
- Xylene 1330-20-7 1.0%
- Naphthalene 91-20-3 0.1%
- Ethylbenzene 100-41-4 0.1%

US States Regulatory Reporting

CA Prop65
This product contains a chemical known to the State of California to cause cancer.
- Naphthalene 91-20-3
- Ethylbenzene 100-41-4

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

US State Right-To-Know Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexanone</td>
<td>108-94-1</td>
<td>CA, CT, IL, MN, PA, RI</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>CA, CT, IL, MI, MN, NJ, PA, RI</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>CA, CT, IL, MN, NJ, PA, RI</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>CA, CT, IL, MN, NJ, PA, RI</td>
</tr>
</tbody>
</table>

Canadian Regulations

Canadian Domestic Substance List
- Cyclohexanone 108-94-1
Environmental

CERCLA
- Cyclohexanone: 108-94-1, 5,000 lbs
- Xylene: 1330-20-7, 100 lbs
- Naphthalene: 91-20-3, 100 lbs
- Ethylbenzene: 100-41-4, 1,000 lbs

Clean Water Section 307 Priority Pollutants
None.

Safe Drinking Water Act Maximum Contaminant Levels
None.

International Regulations

European Inventory of Existing Commercial Substances (EINECS)
- Ethofumesate: 26225-79-6
- Cyclohexanone: 108-94-1
- Xylene: 1330-20-7
- Naphthalene: 91-20-3
- Ethylbenzene: 100-41-4

SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):
- Health - 3
- Flammability - 3
- Reactivity - 0
- Others - none
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason to Revise: Re-numbered due to system update. Updated sections as needed.

Revision Date: 10/11/2006

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