



MSDS Number: 00000000075

## FINALE<sup>®</sup> HERBICIDE

MSDS Version 2.2

### SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Product Name** FINALE<sup>®</sup> HERBICIDE  
**Chemical Name** active ingredient glufosinate ammonium: butanoic acid, 2-amino-4-(hydroxymethylphosphinyl)-, monoammonium salt  
**Synonym**  
**MSDS Number** 75  
**Chemical Family**  
**Chemical Formulation**  
**EPA Registration No.** 432-1229  
**Canadian Registrat. No.**

Bayer Environmental Science  
 95 Chestnut Ridge Road  
 Montvale, NJ 07645  
 USA

For Product Use Information: (800)331-2867 Monday through Friday(CRLF) 8:00AM-4:30PM(CRLF) For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day(CRLF) For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

**Product Use Description** Finale Herbicide is for nonselective weed control of emerged weeds in noncrop areas.

### 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>
Glufosinate-ammonium	77182-82-2	11.3300	
Other ingredients, including:		88.6700	
Alkyl hydroxy-poly(oxyethylene)sulfate-salts	9004-82-4		

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### SECTION 3. HAZARDS IDENTIFICATION

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

<b>Emergency Overview</b>	Cause substantial but temporary eye injury. Harmful if swallowed.
<b>Physical State</b>	liquid
<b>Odor</b>	weakly pungent
<b>Appearance</b>	blue to bluish-green
<b>Immediate Effects</b>	
<b>Eye</b>	Cause substantial but temporary eye injury.
<b>Skin</b>	Harmful if absorbed through the skin.
<b>Ingestion</b>	Harmful if swallowed.
<b>Inhalation</b>	Harmful if inhaled.
<b>Signs and Symptoms</b>	Gastrointestinal disturbance, tremors, convulsions, respiratory depression, cardiac arrhythmia, decreased blood pressure, drowsiness and/or loss of consciousness. These symptoms may be delayed by up to 48 hours after exposure.

### SECTION 4. FIRST AID MEASURES

<b>Eye</b>	Flush eyes with plenty of water. Get medical attention immediately if irritation persists.
<b>Skin</b>	Remove contaminated clothing. Wash skin immediately with plenty of soap and water. Get medical attention.
<b>Ingestion</b>	Rinse mouth thoroughly with plenty of water. Do not induce vomiting. Get medical attention immediately.
<b>Inhalation</b>	Remove victim to fresh air. Get medical attention if breathing difficulty develops.
<b>Note to Physician</b>	<p>Symptoms may be delayed by up to 48 hours following ingestion. Thus, a patient ingesting undiluted product treated as outlined below. Treatment should be symptomatic and supportive.</p> <p>In addition, the following procedures are generally recommended: If ingested, endotracheal intubation and gastric lavage should be performed as soon as possible, followed by charcoal and sodium sulfate administration. Respiratory, Cardiac and Central Nervous Systems should be monitored with particular regard to ECG, electrolyte balance (especially for potassium) and signs of increased intracranial pressure.</p>

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In the event of a large exposure, dialysis and/or hemoperfusion should be conducted as soon as possible to eliminate the compound from the body. In the event of convulsions, administer phenobarbital or diazepam.

There is no specific antidote. Glufosinate-ammonium does not inhibit cholinesterase; thus atropine and 2-PAM are contraindicated. Recovery is normally spontaneous, usually within 48 hours.

### SECTION 5. FIRE FIGHTING MEASURES

**Flash Point** 95 °C / 203 °F  
Method: Closed Cup

**Suitable Extinguishing Media** Small Fires:, dry chemical, carbon dioxide (CO2)

Large Fires:, foam, water, Move containers from fire area if without risk., Cool containers with water from maximum distance.

**Fire Fighting Instructions** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear. Keep upwind. Isolate hazard area. Avoid inhalation of smoke and fumes. Use water or foam to reduce fumes. Do not touch spilled material. If possible, move containers from area. Extinguish only if flow can be stopped. Use flooding amounts of water as a fog. Cool containers with flooding amounts of water from as far a distance as possible. Avoid breathing vapors.

FLAMMABILITY CLASSIFICATION/RATING:  
NFPA/OSHA Class: IIIB  
NFPA Rating (Fire): 1

### 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. See Section 13 for any applicable Reportable Quantity (RQ) and other federal regulatory information.

**Land Spill or Leaks** Small Spill: Absorb with an inert absorbent material such as granular clay, saw dust or pet litter. Sweep up carefully while avoiding the formation of a dust cloud. Place in an approved chemical waste container for disposal. Rinse spill area with small amount of soapy water. Contain and absorb the rinsate with inert absorbents and place into the same disposal container. Area can be washed with water to remove the last trace residue. Do not allow water to contaminate water supplies or sewers.

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Large Spill: Eliminate all ignition sources. Dike far ahead of liquid spill for later disposal. All equipment used to clean up spill should be grounded. Prevent entry into waterways, sewers, basements or confined areas. Inform appropriate authorities immediately if contamination occurs. Contact Bayer for further assistance if necessary.

### SECTION 7. HANDLING AND STORAGE

<b>Handling Procedures</b>	Avoid contact with skin, eyes and clothing. Avoid breathing vapors and spray mist. Do not use near heat or open flame.
<b>Storing Procedures</b>	Do not contaminate water, food, or feed by storage or disposal. Do not use or store near heat or open flame. Store in original container. Store product in a secure storage area.
<b>Work/Hygienic Procedures</b>	<p>Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.</p> <p>Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.</p> <p>Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. Then wash thoroughly and put on clean clothing.</p>

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Engineering Controls</b>	Control airborne concentrations below the exposure guidelines. Local exhaust ventilation may be necessary.
<b>Eye/Face Protection</b>	<p>safety glasses splash goggles or face-shield</p> <p>An emergency eye wash must be readily accessible to the work area.</p>
<b>Body Protection</b>	Chemical-resistant gloves (Neoprene, Nitrile, PVC) other protective clothing to avoid skin contact
<b>Respiratory Protection</b>	<p>Ensure adequate ventilation. If not adequate, use a chemical cartridge-type respirator approved by the National Institute of Occupational Health and Safety. Ensure good ventilation. If not adequate, use a chemical cartridge-type respirator approved by the National Institute of Occupational Health and Safety.</p> <p>The following personal protective equipment (PPE) must be worn when using product or upon early entry into treated areas during the Restricted Entry Interval (REI):</p> <ul style="list-style-type: none"><li>Long sleeved shirt and long pants; or Coveralls (required for REI only)</li><li>Chemical-resistant gloves</li><li>Shoes and socks</li></ul>

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Protective eyewear  
Chemical-resistant apron during mixing and loading

See "User Safety Recommendations" on the product label for additional details concerning the use of PPE under the EPA Worker Protection Standards (40 CFR Part 170).

### Exposure Limits

None Established

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	blue to bluish-green
<b>Physical State</b>	liquid
<b>Odor</b>	weakly pungent
<b>pH</b>	6.5 +/- 1
<b>Vapor Pressure</b>	Not available
<b>Vapor Density (air = 1)</b>	Not available
<b>Specific Gravity</b>	1.06(±0.05) at 20 °C
<b>Bulk Density</b>	8.82 lb/gal at 20 °C
<b>Boiling Point</b>	Not available
<b>Melting/Freezing Point</b>	Not available
<b>Solubility (in water)</b>	pH: 5 1,370 g/l at 22 °C soluble
<b>Solubility (in Solvent/Oil)</b>	Not available
<b>Minimum Ignition Energy (mj)</b>	Not available
<b>Minimum Explosion Conc. (MEC)</b>	Not available

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**Octanol/Water Partition Coefficient**      pH: 7  
logPow: < 0.1

**Other Information**      EVAPORATION RATE (BUTYL ACETATE = 1): Not available  
DUST EXPLOSION SEVERITY DATA: Not applicable  
LIMITED OXYGEN CONCENTRATION (LOC): Not available

### SECTION 10. STABILITY AND REACTIVITY

**Chemical Stability**      Stable at ambient temperatures

**Conditions to Avoid**      None known

**Incompatibility**      None known

**Hazardous Products of Decomposition**      None known.

**Hazardous Polymerization (Conditions to avoid)**      Will not occur.

### SECTION 11. TOXICOLOGICAL INFORMATION

**Acute Oral Toxicity**      Finale Herbicide  
Rat: LD50: 3,570 mg/kg  
Slightly toxic.

**Acute Dermal Toxicity**      Finale Herbicide  
Rat: LD50: > 2,000 mg/kg  
No more than slightly toxic

**Acute Inhalation Toxicity**      Finale Herbicide  
Rat: LC50: 4.42 mg/l 4 h  
Practically non-toxic.

**Skin Irritation**      Finale Herbicide  
Rabbit: Slightly irritating  
Primary Irritation Index = 0.7/8.0

**Eye Irritation**      Finale Herbicide  
Rabbit: Moderately irritating

**Sensitization**      Finale Herbicide  
Guinea pig: Non-sensitizing

NOTE: The severity classifications listed above are those of Bayer, and, particularly for eye irritation, may not always coincide with EPA-mandated Precautionary Statements.

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THE FOLLOWING DATA WERE DEVELOPED WITH: glufosinate-ammonium, the active ingredient

**Chronic Toxicity** No clear evidence of target organ toxicity was noted in studies with rats, mice or dogs. An adaptive increase in kidney weight was noted in several species but no functional or histopathological changes were observed. No-Observable-Effect-Levels (NOEL's) for the 1-year dog, 2.5-year rat and 2-year mouse studies were approximately 5 mg/kg/day, 2.1 mg/kg/day and 14 mg/kg/day, respectively. Glufosinate-ammonium was not carcinogenic in either rats or mice.

### Assessment Carcinogenicity

**ACGIH**

None

**NTP**

None

**IARC**

None

**OSHA**

None

### Reproductive & Developmental Toxicity

Evidence of developmental toxicity was noted in rats but only at dose levels that were also toxic to the mother. No developmental toxicity was noted in rabbits. The maternal and developmental NOEL's were considered to be 10 and 50 mg/kg/day, respectively, in rats; and 6.3 and 20 mg/kg/day (highest dose tested), respectively, in rabbits. The parental and reproductive NOEL's in a 2-generation rat reproduction study were considered to be 400 ppm (approximately 4 mg/kg/day) and 120 ppm (approximately 12 mg/kg/day), respectively, based on decreased kidney weights at 120 ppm and decreased litter size at 360 ppm.

### Neurotoxicity

Glufosinate-ammonium does not inhibit acetylcholinesterase activities. No evidence of delayed neurotoxicity was noted in hens. Neurobehavioral effects (e.g., hypersensitivity, tremors, convulsions) related to stimulation of the central nervous system (CNS) were observed in some studies but only at lethal or near lethal dose levels.

### Teratogenicity

No evidence of teratogenicity was noted in either rats or rabbits.

### Mutagenicity

No evidence of mutagenicity or other genetic effects was noted in a battery of in vitro or in vivo studies.

## SECTION 12. ECOLOGICAL INFORMATION

### Acute and Prolonged Toxicity to Fish

Finale Herbicide  
Bluegill sunfish  
LC50: 79 mg/l  
Exposure Time: 96 h

Finale Herbicide  
Rainbow trout

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LC50: 42 mg/l  
Exposure Time: 96 h

Finale Herbicide  
Carp  
LC50: 80 mg/l  
Exposure Time: 96 h

Glufosinate-ammonium, the active ingredient  
Freshwater Fish & Invertebrates  
LC50: 560 - 1,000 mg/l

### Acute Toxicity to Aquatic Invertebrates

Finale Herbicide  
Daphnia  
EC50: > 100 mg/l  
Exposure Limit: 48 h

Glufosinate-ammonium, the active ingredient  
Marine and Estuarine Organisms  
LC50: 7.2 - 125 mg/l

### Chronic Toxicity to Aquatic Invertebrates

Glufosinate-ammonium, the active ingredient  
Freshwater Invertebrates  
NOEC: 32 mg/l

### Toxicity Other Non Mammal Terr. Species

Acute Oral  
Glufosinate-ammonium, the active ingredient  
Avian  
LD50: > 2,000 mg/kg

Acute Dietary  
Glufosinate-ammonium, the active ingredient  
Avian  
LC50: > 5,000 ppm

Reproduction  
Glufosinate-ammonium, the active ingredient  
Avian  
NOEL: 400 ppm

Contact  
Glufosinate-ammonium, the active ingredient  
Honeybee  
LD50: > 600 ug/bee

### Stability in Water

Glufosinate-ammonium, the active ingredient  
Hydrolytic Half-Life: > 300 days

### Photodegradation

Glufosinate-ammonium, the active ingredient  
Half Life: > 300 d



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<b>Stability in Soil</b>	Glufosinate-ammonium, the active ingredient Soil Half-Life: 6-23 days in filed dissipation studies Koc: 10-1229 (depending upon soil type)
<b>Bioaccumulation</b>	Glufosinate-ammonium, the active ingredient No accumulation
<b>Environmental Precautions</b>	<p>Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not clean equipment or dispose of equipment washwaters in a manner that will contaminate water resources or arable land.</p> <p>Glufosinate-ammonium and its degradates have those properties normally associated with pesticides that have been detected in groundwater. Use of this product in areas with coarse soils and high water tables may result in groundwater contamination.</p>
<b>Ecological Information</b>	Finale Herbicide is no more than slightly toxic to freshwater fish and aquatic invertebrates. Based on studies conducted with other formulations of glufosinate-ammonium, it is expected to be relatively non-toxic to birds, bees, earthworms and beneficial insects, but may be moderately toxic to some marine and/or estuarine organisms.
<b>Environmental Fate</b>	Glufosinate-ammonium is very soluble in water and under laboratory conditions is hydrolytically and photolytically stable. Its mobility under laboratory conditions varies widely, depending upon the soil type. However, the results of numerous terrestrial field dissipation studies indicate that the potential for groundwater contamination is minimal. This appears to be primarily a result of its rapid degradation by microorganisms in the soil and a tendency to bind to certain soil elements resulting in no measurable leaching. Glufosinate-ammonium does not accumulate in fatty tissues of fish or other animals.

### SECTION 13. DISPOSAL CONSIDERATIONS

<b>General Disposal Guidance</b>	Do not contaminate water, food, or feed by disposal.  Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility.
<b>Container Disposal</b>	Empty containers should be triple rinsed (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.
<b>RCRA Classification</b>	Not Regulated under this Statute

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## SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: None

DOT SHIPPING LABEL: None

NOTE: For transport purposes (49 CFR Part 173.132), the calculated 1-Hour LC50 (Rat) is: 17.68 mg/l.

## SECTION 15. REGULATORY INFORMATION

### US Federal

**EPA Registration No.** 432-1229

**TSCA list**

Alkyl hydroxy-poly(oxyethylene)sulfate-salts 9004-82-4

**TSCA 12b export notification**

None

**SARA Title III - section 302 - notification and information**

None

**SARA Title III - section 313 - toxic chemical release reporting**

None

### US States Regulatory

**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

None

### Canadian Regulations

**Canadian Registrat. No.**

**Canadian Domestic Substance List**

Alkyl hydroxy-poly(oxyethylene)sulfate-salts 9004-82-4

### Environmental

**CERCLA**

None

**Clean Water Section 307 Priority Pollutants**

None

**Safe Drinking Water Act Maximum Contaminant Levels**

None

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### International Regulations

#### EU Classification

None

#### European Inventory of Existing Commercial Substances (EINECS)

Glufosinate-ammonium

77182-82-2

### SECTION 16. OTHER INFORMATION

	Health	Flammability	Reactivity	Others
HMIS	2	1	0	F
NFPA	2	1	0	

#### REVISED SECTIONS:

MSDS Revision Indicators: Company name change.

Print Date: 12/09/2002

Supersedes MSDS, which is older than: 12/04/2002

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