



CREDIT™ SYSTEMIC HERBICIDE

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Nufarm Credit Systemic Herbicide

Synonyms: None

EPA Reg. No. : 71368-20

Company Name: Nufarm Americas, Inc.
1333 Burr Ridge Parkway, suite 125A
Burr Ridge, IL 60521

Phone Numbers: **For Chemical Emergency, Spill, Leak, Fire, Exposure, Or Accident, Call CHEMTREC Day or Night: 1-800-424-9300.**
For Medical Emergencies Only, Call 877-325-1840.
For additional non-emergency information, call: 1-800-852-5234.

Date: March 12, 2002

Revisions: New or updated information in all sections.

Reasons for Revisions: General revision utilizing more specific data.

Supersedes: December 22, 1999

2. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Active Ingredient: Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt	38641-94-0 (as the salt) (1071-83-6 for glyphosate acid)	41.0
Inert Ingredients:		<u>59.0</u>
Inert Ingredient Component: Ethoxylated Tallowamines*	61791-83-6	
Total		100.0

*Hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR Part 1910.1200). See Section 8 for exposure limits.

3. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance and Odor: Clear, viscous greenish/yellow solution.

Warning Statements: Keep out of reach of children. CAUTION. Causes moderate eye irritation. Harmful if swallowed or inhaled. Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling.

Potential Adverse Health Effects:

Likely Routes of Exposure: Skin contact and inhalation.

Eye Contact: The undiluted product may cause pain, redness and tearing based on toxicity studies.

Skin Contact: This product is no more than slightly toxic and no more than slightly irritating based on toxicity studies.

Ingestion: This product is no more than slightly toxic based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed. Ingestion of similar formulations has been reported to produce gastrointestinal discomfort with irritation of the mouth, nausea, vomiting and diarrhea. Oral ingestion of large quantities of one similar product has been reported to result in hypotension and lung edema.

Inhalation: This product is no more than slightly toxic if inhaled based on toxicity studies.

Medical Conditions Aggravated by Exposure: None Known.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

If in Eyes: Flush eyes with plenty of water. Call a physician if irritation persists.

If on Skin: Wash thoroughly with soap and water.

If Inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

If Swallowed: This product will cause gastrointestinal tract irritation. Immediately dilute by swallowing water or milk. Get medical attention. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

5. FIRE FIGHTING MEASURES

Flash Point: None

Autoignition Temperature: Not determined.

Hazardous Products of Combustion: CO₂, CO, NO_x

Extinguishing Media: In case of fire, use water (flood with water), dry chemical, CO₂, or alcohol foam.

Unusual Fire or Explosion Hazards: None

Fire Fighting Equipment: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container. Flush residual spill area with water.

Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Contact appropriate state agency when considering a land spreading disposal option.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Any recovered spilled liquid should be collected and disposed of similarly.

7. HANDLING AND STORAGE

Handling:

Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. 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. 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 contaminate water when disposing of equipment washwaters. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. **DO NOT REUSE THIS CONTAINER.**

Spray solutions of this product should be mixed, stored or applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas that may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

Storage:

Do not contaminate water, foodstuffs, feed or seed by storage or disposal. **STORE ABOVE 10°F (-12°C) TO KEEP PRODUCT FROM CRYSTALLIZING.** Crystals will settle to the bottom. If allowed to crystallize, place in a warm room 68°F (20°C) for several days to redissolve and shake or roll to mix well before using. Product is stable under normal conditions of storage and handling for at least 5 years. Store in a cool, well-ventilated place away from foodstuffs, reducing agents and acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal Protective Equipment:

Eye Protection: Based on usage conditions, consider wearing chemical splash goggles during mixing/pouring operations or other activities in which eye contact with undiluted CREDIT Systemic Herbicide is likely to occur. Protective eyewear is not mandatory for mixing, pouring, application or other use of this product in accordance with label directions.

Skin Protection: Wear appropriate protective clothing to avoid skin contact. Applicators and other handlers must wear long-sleeved shirt, long pants, shoes plus socks and protective eyewear. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Respiratory Protection: For Handling of the Undiluted Product: Undiluted CREDIT Systemic Herbicide is not likely to be present an airborne exposure concern during normal handling. If there is an accidental discharge of the material during manufacture or handling that produces a heavy vapor or mist, workers should use NIOSH/MSHA approved equipment. In work situations where an air purifying respirator is appropriate to be used, use of a full face respirator equipped with purifying elements for protection against organic vapor and dust/mist approved for pesticides is recommended. Use cartridges with MSHA/NIOSH approval number TC-23C or canister with MSHA/NIOSH approval number TC-14G. Full facepiece replaces the need for chemical goggles. Observe respirator use limitations specified by the manufacturers. Respiratory protection programs must comply with 29 CFR Part 1910.134.

For Application of Product Diluted in accordance with label instructions: Respirators are not required for applications of use - dilutions of this product.

Ventilation: No special precautions are recommended.

Airborne Exposure Limits:

<u>Product/ Component</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
CREDIT Systemic Herbicide	Not established	Not established
Ethoxylated Tallowamine	Not established	Not established

9. PHYSICAL AND CHEMICAL PROPERTIES
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Appearance: Clear, viscous greenish/yellow solution

Odor: Odorless @ 23 degrees C

pH: 4.84 (1% solution)

Specific Gravity: 1.16 @ 20 degrees C

NOTE: 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.

10. STABILITY AND REACTIVITY

Stability: Product is stable under normal conditions of storage and handling. Store in a cool, well-ventilated place away from foodstuffs, reducing agents and acids.

Materials to Avoid: Acids and bases.

Hazardous Decomposition Products: None.

Hazardous Polymerization: Does not occur. This product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid base reaction.

11. TOXICOLOGICAL INFORMATION

Product: Data from laboratory studies on this product are summarized below:

Single exposure (acute) studies indicate:

Oral: Practically Non-toxic (Rat LD₅₀: > 5,000 mg/kg); FIFRA Category IV

Dermal: Practically Non-toxic (Rat LD₅₀: > 5,000 mg/Kg); FIFRA Category IV

Inhalation: Slightly toxic (Rat 4-hr LC₅₀: > 2.05 mg/L); FIFRA Category IV

Eye Irritation: Rabbits (6): Moderately irritating (including transient corneal opacity) to unrinsed eyes. Mildly irritating to rinsed eyes. Unrinsed eyes cleared by day 7 and rinsed eyes cleared by 72 hours; FIFRA Category III

Skin Irritation: Rabbits (3); 4-hr exposure: Slightly irritating. Cleared in all animals within 72 hours; FIFRA Category IV

No skin allergy was observed in guinea pigs following repeated skin exposure.

Components: Data from laboratory studies and from the scientific literature on components of this product:

ISOPROPYLAMINE SALT OF GLYPHOSATE:

Data from studies with formulation comprised of 62% isopropylamine salt of glyphosate (MON 0139) indicate the following:

In repeat dosing studies (6-month), dogs fed MON 0139 exhibited slight weight changes. Following repeated skin exposure (30 weeks) to MON 0139, skin irritation was the primary effect in rabbits.

Additional toxicity information is available on glyphosate, the active herbicidal ingredient of MON 0139. Following repeated exposures (90-days) to glyphosate in their feed, decreased weight gains were noted at the highest test level in mice, while no treatment-related effects occurred in rats. Following repeated skin exposure (3 weeks) to glyphosate, slight skin irritation was the primary effect observed in rabbits. No skin allergy was observed in guinea pigs following repeated skin exposure. There was no evidence of effects on the nervous system, including delayed effects in chickens (repeat oral doses) or cholinesterase inhibition in rats (single oral doses). Reduced body weight gain and effects on liver tissues were observed at the high-dose level in one long-term (2 year) feeding study with rats, while no treatment-related effects occurred in a second study. No adverse effects were observed in feeding

studies with dogs. Glyphosate did not produce tumors in any of these studies. Based on the results from the chronic studies, EPA has classified glyphosate in category E (evidence of non-carcinogenicity for humans). No birth defects were noted in rats and rabbits given glyphosate orally during pregnancy, even at amounts which produced adverse effects on the mothers. Glyphosate was fed continuously to rats at very high dose levels for 2 successive generations. Toxicity was reported in offspring from the high dose, a level which also produced adverse effects on the mothers. In a 3 generation study conducted at lower dose levels, no effects were seen on the ability of male or female rats to reproduce. Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacterial cells.

ETHOXYLATED TALLOWAMINE:

The surfactant component of CREDIT Herbicide is reported to cause irritation to the eyes and skin and may contribute to the irritation potential reported for this herbicide. Ingestion may produce gastrointestinal irritation, nausea, vomiting and diarrhea.

12. ECOLOGICAL INFORMATION

This product has been shown to be slightly to moderately toxic in aquatic studies.

Rainbow Trout 96-hr LC ₅₀ :	22 mg/L (static)
Rainbow Trout 96-hr LC ₅₀ :	8.2 mg/L (dynamic)
Daphnia Magna 48-hr LC ₅₀ :	37 mg/L (aeration)
Daphnia Magna 48-hr LC ₅₀ :	24 mg/L (without aeration)
Bluegill Sunfish 96-hr LC ₅₀ :	5.8 mg/L (dynamic)
Bluegill Sunfish 96-hr LC ₅₀ :	14 mg/L (static)
Gammarus pseudolimnaeus 48-hr EC ₅₀ :	42 mg/L
Fathead minnow 96-hr LC ₅₀ :	9.4 mg/L
Channel Catfish 96-hr LC ₅₀ :	16mg/L
Chinook Salmon 96-hr LC ₅₀ :	20mg/L
Coho Salmon 96-hr LC ₅₀ :	2.1 mg/L
Algae S. Capricornutum 72-hr EC ₅₀ :	2.1 mg/L

This product has been shown to be practically non-toxic to avian species following subacute dietary exposure.

Bobwhite Quail 8-day LC ₅₀ :	>6300 ppm
Mallard Duck 8-day LC ₅₀ :	>6300 ppm

13. DISPOSAL CONSIDERATIONS

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

DISPOSAL: Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all label safeguards until container is destroyed.

PLASTIC BOTTLES AND NON-RETURNABLE PLASTIC DRUMS: Do not reuse container. Triple rinse container. Then puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

RETURNABLE / REFILLABLE CONTAINERS: After use, return the container to the point of purchase or designated locations. The container must only be refilled with this product. **DO NOT REUSE THE CONTAINER FOR ANY OTHER PURPOSE.** Prior to refilling, inspect thoroughly for damage such as cracks, punctures, abrasions and damaged or worn out threads on closure devices. Do not refill or transport damaged or leaking containers. Check for leaks after refilling and before transportation. If the container is not being refilled, return it to the point of purchase.

14. TRANSPORT INFORMATION

Follow the precautions indicated in the Handling and Storage Section, Section 7 of this MSDS.

DOT Proper Shipping Name: Not Applicable.
DOT Hazard Class / I.D. No.: Not Applicable.
DOT Label: Not Applicable.
U.S. Surface Freight Classification: Weed killing compound, N.O.I.B.N.

15. REGULATORY INFORMATION

SARA Hazard Notification:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):	Immediate.
Section 313 Toxic Chemical(s):	Not Applicable.

Reportable Quantity (RQ) under U.S. CERCLA: Not applicable.

TSCA Inventory: All components are on the US EPA's TSCA Inventory List.

16. OTHER INFORMATION

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED 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-accepted label.

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