

Product No. 45A/4510
Product name: **GLYFOSÒ**
Active Ingredient: Glyphosate
EPA Reg. No.: 524-445-4787

KEM/September 1999
Supersedes issue dated March 1994
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MATERIAL SAFETY DATA SHEET

GLYFOSÒ

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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Name **GLYFOSÒ**

Material Use **Herbicide**

Signal word **WARNING! AVISO!**

EPA Reg. No. 524-445-4787

Company ID **CHEMINOVA AGRO A/S**
P.O. Box 9
DK-7620 Lemvig
Denmark
(+45) 96 90 96 90

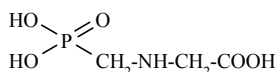
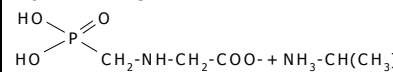
In the US:
Cheminova, Inc.
1700 Route 23
Wayne, NJ 07470
(973) 305-6600

In Canada:
Cheminova Canada
5915 Airport Road, Suite 316
Mississauga, ON L4V 1T1
(905) 405-1923
314-694-4000

Phone #'s Health Emergency Phone Number (call collect):.....
Or CHEMTREC toll-free 1-800-424-9300
Or CANUTECH (613) 996-6666
Non-emergency Information in the US: (973) 305-6600
In Canada (905) 405-1923

2. COMPOSITION/INFORMATION ON INGREDIENTS

2.1. ACTIVE INGREDIENT: **Glyphosate, in the form of its isopropylamine salt**

| | | |
|--------------------------|--|---|
| Chemical Name | Glyphosate | Glyphosate, isopropylamine salt |
| CAS Name | Glycine, N-(Phosphonomethyl)-Glyphosate | Glycine, N-(phosphonomethyl)-compd. with 2-propanamine (1:1) |
| ISO Name | - | - |
| CAS No. | 1071-83-6 | 38641-94-0 |
| Molecular Weight | 169.1 | 228.2 |
| Empirical Formula | C ₃ H ₈ NO ₅ P | C ₆ H ₁₇ N ₂ O ₅ P |
| Structural Formula |  |  |

2.2. TYPICAL CONTENT:

The information presented herein is believed to be accurate and reliable, but is presented without the guarantee or responsibility on the part of Cheminova Agro A/S.

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Active Ingredient Glyphosate, N-(phosphonomethyl)glycine*,
in form of its isopropylamine salt41.0%
Inert Ingredients59.0%

* (Contains 480 g/l of the active ingredient glyphosate in the form of its isopropylamine salt. Equivalent to about 360 g/l of the acid, glyphosate)

| <u>Component</u> | <u>CAS Reg. No.</u> |
|----------------------------|---------------------|
| Ethoxylated Tallowamines** | 61791-26-2 |
| Glyphosate** | 1071-86-6 |

** Hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR §1910.1200)

3. HAZARDS IDENTIFICATION

3.1. Emergency Overview

Appearance and Odor.....
Warning Statements.....

Clear, viscous amber-colored solution
Keep Out of Reach of Children

WARNING! AVISO!

Si Usted no entiende la etiqueta, busque a alguien para que se la explique a Usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

**CAUSES SUBSTANTIAL BUT TEMPORARY EYE INJURY
HARMFUL IF SWALLOWED OR INHALED
REFORMULATION IS PROHIBITED
SEE INDIVIDUAL CONTAINER LABEL FOR REPACKING
LIMITATIONS**

3.2. Health Hazards (Acute and Chronic):

Likely Routes of Exposure

Eye Contact.....

Skin contact and inhalation.

GlyphosÒ may cause pain, redness and tearing based on toxicity studies.

Skin Contact.....

GlyphosÒ is no more than slightly toxic and no more than slightly irritating based on toxicity studies.

Ingestion.....

GlyphosÒ 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.....

GlyphosÒ is no more than slightly toxic if inhaled based on toxicity studies.

3.2. Signs and Symptoms of Exposure....

See 3.1.

3.3. Environmental Hazards

See 12

4. FIRST AID MEASURES

4.1. Emergency and First Aid Procedures:

If in Eyes.....

Immediately hold eyelids open and flush with plenty of water for at least 15 minutes. Get medical attention.

If Swallowed

This product will cause gastrointestinal tract irritation. Immediately dilute by swallowing water or milk. Get medical attention.

If Inhaled

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

4.2. Note.....

For additional human emergency first aid or treatment guidance, call collect, anytime, day or night (314) 694-4000.

5. FIRE-FIGHTING MEASURES

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- 5.1. Extinguishing Media and Procedure Water spray, foam, dry chemical, carbon dioxide or any class B extinguishing agent.
Fight fire upwind. Avoid heavy hose streams. Dike area to prevent water runoff. Firefighters and others that may be exposed to vapors, mists, or products of combustion should wear full protective clothing and self-containing breathing apparatus. Equipment should be thoroughly cleaned after use.
- 5.2. Hazardous Decomposition or Byproducts in a Fire The essential breakdown products are carbon monoxide, carbon dioxide, phosphorus pentoxide, and nitrogen oxide.
- 5.3. Unusual Fire and Explosion Hazards None.

6. ACCIDENTAL RELEASE MEASURES

- 6.1. Personal Protection Observe all protection and safety precautions when cleaning up spills - see 8.
- 6.2. Steps to be taken in Case of Spill . **Small spills** on the floor or other impervious surface, should be soaked up with towels or other absorbent material and discard in the trash. Clean the spill area with soap and water and rinse the area thoroughly.
- Large liquid spills** on the floor or other impervious surface should be contained or diked and then absorbed with attapulgit, bentonite or other absorbent clays. Collect the contaminated absorbent, place in a metal drum and dispose of in accordance with the instructions provided under Disposal (see 13). Thoroughly scrub floor or other impervious surface with a strong industrial detergent and rinse 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 (see 13). 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 (see 13). Any recovered spill liquid should be similarly collected and disposed of.

7. HANDLING AND STORAGE

- 7.1 Precautions to be taken in Handling Do not get in eyes or on clothing. Avoid breathing vapor or spray mist. 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 (Personal Protection - see 8).
- Spray solutions of the product should be mixed, stored or applied using only stainless steel, aluminium, fiberglass, plastic or plastic-lined containers. (materials to avoid - see 10.3)

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.

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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.

- 7.2. Precautions to be taken in Storing..... Do not contaminate water, foodstuffs, feed or seed by storage or disposal.
 7.3. Fire and Explosion Precautions --

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1. Eye Protection Wear chemical splash goggles during mixing/pouring operations or other activities in which eye contact with undiluted **GLYPHOSÒ** is likely to occur.
- Skin Protection Wear appropriate protective clothing to prevent skin contact. Applicators and other handlers must wear long-sleeved shirt, long pants, shoes plus socks and protective eyewear. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. 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 **GLYPHOSÒ** is not likely to present an airborne exposure concern during normal handling. In the event of an accidental discharge of the material during manufacture or handling which produces a heavy vapor or mist, workers should use NIOSH/MSHA approved equipment. In work situation 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 NIOSH/MSHA approval number TC-14G. Full facepiece replaces the need for chemical goggles. Observe respirator use limitation specified by the manufacturers. Respiratory protection programs must comply with 29 CFR §1910.134 **For application of product diluted in accordance with label instructions:** Respirators are not required for applications of use - dilutions of **GLYPHOSÒ**.
- Ventilation No special precautions are recommended.
- 8.2. Exposure Guidelines

| | | |
|-------------------------|------------------|------------------|
| <u>Exposure Limits</u> | <u>OSHA PEL</u> | <u>ACGIH TLV</u> |
| GLYPHOSÒ | None established | None established |
| Ethoxylated Tallowamine | None established | None established |

9. PHYSICAL AND CHEMICAL PROPERTIES

- 9.1. Physical State Clear, viscous solution
 9.2. Color Amber-colored
 9.3. Odor Practically odorless to slight amine-like odor
 9.4. Specific Gravity 1.17 (Water=1)
 9.5. pH 4.7 (1% solution)
 9.6. Flash Point >93°C (>200°F) (Pensky Martens closed tester)

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- 9.7. Autoignition Temperature Not determined
9.8. Flammable Limits --

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 guaranteed analysis of any specific lot or as specification items.

10. STABILITY AND REACTIVITY

10.1. Chemical Stability The product is stable for at least 5 years under normal conditions of warehouse storage.

10.2. Hazardous Decomposition or Byproducts None (see, however, 5.2.).

10.3. Materials to Avoid

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 which 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 cigarettes or other ignition source.

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

11.1. Health Hazards See 3.

11.2. Toxicological Data: Data from laboratory studies conducted with **GLYPHOSÒ** are summarized below. Single exposure (acute) studies indicate:

Ingestion (oral) Practically non-toxic (rat LD₅₀ above 5000 mg/kg). FIFRA Category IV

Skin (dermal) Practically non-toxic (rabbit LD₅₀ above 5000 mg/kg). FIFRA Category IV

Inhalation Slightly toxic (rat 4-hr LC₅₀ above 2.6 mg/l) FIFRA Category III.

Eye Irritation Rabbits (6); 24-hr exp.; Slight to moderate irritation, eye irritation was evident at day 14 but cleared by day 21 after exposure in 1 animal; FIFRA Category II; EC: Corneal opacity -0.0, Iris - 0.0, Erythema - 1.7, Chemosis - 0.8.

Skin Irritation Rabbits (6); 40hr exp.; Essentially non-irritation; Slight erythema (redness) clearing in all animals within 24 hours; FIFRA Category IV; EC: Erythema - 0.0, Edema - 0.0.

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

11.3 COMPONENTS

Data from laboratory studies conducted with **GLYPHOSÒ** and from scientific literature on components of **GLYPHOSÒ**.

11.3.1 Isopropylamine Salt of Glyphosate

Data from studies with a 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 body weight changes. Following repeated skin exposure (3-week) to MON 0139, skin irritation was the primary effect in rabbits.

Additional toxicity information is available on glyphosate, the active ingredient of MON 0139. Following repeated exposure (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.

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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 with long-term (2-year) feeding of glyphosate to mice at high-dose levels.
Reduced body weight gain and eye changes 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.

11.3.2 **Ethoxylated Tallowamine**

The surfactant component of **GLYFOSÒ** 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

GLYFOS® has been shown to be slightly to moderately toxic in aquatic studies. **GLYFOS®** has been shown to be practically non-toxic to avian species following subacute dietary exposure.

| | |
|---|--|
| Rainbow Trout 96-hr LC ₅₀22 mg/L (static) | Fathead Minnow 96-hr LC ₅₀9.4 mg/L |
| Rainbow Trout 96-hr LC ₅₀8.2 mg/L (dynamic) | Channel Catfish 96-hr LC ₅₀16 mg/L |
| <i>Daphnia Magna</i> 48-hr EC ₅₀37 mg/L (aeration) | Chinook Salmon 96-hr LC ₅₀20 mg/L |
| <i>Daphnia Magna</i> 48-hr EC ₅₀24 mg/L (without aeration) | Coho Salmon 96-hr LC ₅₀22 mg/L |
| Bluegill Sunfish 96-hr LC ₅₀5.8 mg/L (dynamic) | Algae s. <i>Capricornutum</i> 72-hr EC ₅₀ ...2.1 mg/L |
| Bluegill Sunfish 96-hr LC ₅₀14 mg/L (static) | Bobwhite quail 8-day LC ₅₀>6300 ppm |
| <i>Gammarus pseudolimnaeus</i> 48-hr EC ₅₀42 mg/L | Mallard Duck 8-day LC ₅₀>6300 ppm |

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13. DISPOSAL CONSIDERATIONS

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 labeled safeguards until container is cleaned or destroyed. **DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.**

Plastic Containers 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.

14. TRANSPORT INFORMATION

IMDG..... Not applicable
RID/ADR..... Not applicable
ICAO/IATA..... Not applicable
UN No. Not applicable
Proper Shipping Name..... Not applicable
DOT Proper Shipping Name..... Not applicable
DOT Hazard Class/ID No. Not applicable
DOT LabelNot applicable
US Surface Freight Classification.....Weed killing compound, N.O.I.B.N

15. REGULATORY INFORMATION

SARA Hazard Notificaiton:
Hazard Categoies Under Criteria of SARA Title II 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

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and the MSDS contains all of the information required by the CPR.

