

Product No.: 45A/4510
 Product Name: **GLYFOS® X-TRA**
 Active Ingredient: Glyphosate
 EPA Reg. No. **4787-23**

RRS/April 2000
 Supercedes Issue Marked GHB/November 1999

MATERIAL SAFETY DATA SHEET

GLYFOSÒ X-TRA

Table of Contents:

- | | |
|---|-------------------------------------|
| 1. Identification of the substance/preparation and of the company/undertaking | 9. Physical and chemical properties |
| 2. Composition/information on ingredients | 10. Stability and reactivity |
| 3. Hazards identification | 11. Toxicological information |
| 4. First aid measures | 12. Ecological information |
| 5. Fire-fighting measures | 13. Disposal considerations |
| 6. Accidental release measures | 14. Transport information |
| 7. Handling and storage | 15. Regulatory information |
| 8. Exposure controls/personal protection | 16. Other information |

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

Product Name **GLYFOS® X-TRA**
 Supplier: **CHEMINOVA INC.**
 1700 Route 23
 Wayne, NJ 07470
 Emergency Telephone No. - see 16: Other Information (last page)

2. COMPOSITION/INFORMATION ON INGREDIENTS

2.1. ACTIVE INGREDIENT:	Glyphosate, in the form of its isopropylamine salt	
Common 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
EC No. (EINECS No.)	213-997-4	254-056-8
Molecular Weight	169.07	228.18
Empirical Formula	C ₃ H ₈ NO ₅ P	C ₆ H ₁₇ N ₂ O ₅ P
Structural Formula	$\begin{array}{c} \text{HO} \quad \text{O} \\ \quad \diagdown \quad \diagup \\ \quad \text{P} \\ \quad \diagup \quad \diagdown \\ \text{HO} \quad \text{CH}_2\text{-NH-CH}_2\text{-COOH} \end{array}$	$\begin{array}{c} \text{HO} \quad \text{O} \\ \quad \diagdown \quad \diagup \\ \quad \text{P} \\ \quad \diagup \quad \diagdown \\ \text{HO} \quad \text{CH}_2\text{-NH-CH}_2\text{-COO}^- + \text{NH}_3\text{-CH(CH}_3\text{)}_2 \end{array}$
2.2. TYPICAL CONTENT:		
Active Ingredient	Glyphosate, N-(phosphonomethyl)glycine*, as its isopropylamine salt 41.0% by weight	
Inert Ingredients	Surfactant, water, etc. 59.0% by weight	
Content of reportable ingredients	Surfactant 10 - 30% by weight	

Material Safety Data Sheet according to 91/155/EEC (preparations)/93/112/EEC (substances) as amended.
 The information presented herein is believed to be accurate and reliable, but is presented without any warranty, express nor implied, on the part of Cheminova, Inc.

Product No.: 45A/4510
 Product Name: **GLYFOS® X-TRA**
 Active Ingredient: Glyphosate
 EPA Reg. No. **4787-23**

RRS/April 2000
 Supercedes Issue Marked GHB/November 1999

The surfactant has EU classification: Xn;R22 Xi;R36 N;R51/53: Harmful if swallowed. Irritating to eyes. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

The product contains Tallow alkylamine ethoxylate (CAS No. 61791-26-2).

Material Use	Herbicide
2.3. EU Classification of the Product ...	None
2.4. WHO Classification	None (Technical product unlikely to present acute hazard in normal use)
2.5. US Classification	Toxicity Category II, Signal Word: Warning
2.6. Classification – Canada	Caution Irritant
2.7.	Health: 1
	Flammability: 0
	Reactivity: 0
	Personal Protection: See 8.1.

3. HAZARDS IDENTIFICATION

- 3.1. Health Hazards (Acute and Chronic):
- Likely Routes of Exposure
 - Eye Contact The product may cause pain, redness and tearing as shown by toxicity studies.
 - Skin Contact The product is only slightly toxic and only slightly irritating as shown by toxicity studies.
 - Ingestion The product is only slightly toxic as shown by 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 The product is only slightly toxic if inhaled as shown by 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. Get medical attention.
 - If Swallowed The product will cause gastrointestinal tract irritation. Immediately dilute by swallowing water or milk. Get medical attention.

Product No.: 45A/4510
Product Name: **GLYFOS® X-TRA**
Active Ingredient: Glyphosate
EPA Reg. No. **4787-23**

RRS/April 2000
Supercedes Issue Marked GHB/November 1999

Page 3 of 7

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

5. FIRE-FIGHTING MEASURES

- 5.1. Extinguishing Media and Procedure Water spray, foam, dry chemical, carbon dioxide or any class B extinguishing agent.

Use water spray to keep fire-exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Fight fire from protected location or maximum possible distance. Avoid heavy hose streams. Dike area to prevent water runoff. Firemen should wear self-contained breathing apparatus and protective clothing.
- 5.2. Hazardous Decomposition or Byproducts in a Fire The essential breakdown products are carbon monoxide, carbon dioxide, phosphorus pentoxide and nitrogen oxides.
- 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 liquid spills** on the floor or other impervious surface, should be soaked up with towels or other absorbent material and discarded 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 attapulgate, 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.

Product No.: 45A/4510
Product Name: **GLYFOS® X-TRA**
Active Ingredient: Glyphosate
EPA Reg. No. **4787-23**

RRS/April 2000
Supercedes Issue Marked GHB/November 1999

7. HANDLING AND STORAGE

7.1 Precautions to Be Taken in Handling Do not get in eyes or breathe mist or get in 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 (see 8, Personal Protection).

Spray solutions of the 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.

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. Respiratory Protection The undiluted product 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 put on respiratory protection equipment in conformity with local regulations.

For application of product diluted in accordance with label instructions: Respirators are not required for applications of use-dilutions of the product.

Protective gloves Wear heavy duty, natural rubber gloves.

Eye Protection Wear goggles, face shield or safety glasses.

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.

8.2. Work/Hygienic Practices Do not get in eyes or get in or on clothing. Avoid breathing vapor or spray mist. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Wash thoroughly with soap and

Product No.: 45A/4510
Product Name: **GLYFOS® X-TRA**
Active Ingredient: Glyphosate
EPA Reg. No. **4787-23**

RRS/April 2000
Supercedes Issue Marked GHB/November 1999

water after handling. Remove contaminated clothing immediately and wash before reuse. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

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. Melting Point	Below 0°C
9.5. Boiling Point	113°C
9.6. Specific Gravity	1.16 g/cm ³ at 20°C
9.7. Vapor Pressure	For the active ingredient glyphosate (acid): 1.75 x 10 ⁻⁷ mm Hg (1.31 x 10 ⁻⁵ Pa) at 25°C
9.8. Viscosity	43 cS at 20°C, 18 cS at 40°C (kinematic viscosity)
9.9. Solubility in Water	The product is fully miscible with water (solubility active ingredient glyphosate (acid): 10.5 g/l at 20°C).
9.10. Partition Coefficient n-Octanol/Water	P = 4.5 x 10 ⁻⁴ ; Log P = - 3.4 (active ingredient glyphosate (acid))
9.11. pH	4.5 (1% solution in water) at 20°C
9.12. Flash Point	Above 113°C
9.13. Autoignition Temperature	N.a.
9.14. Flammable Limits	N.a.

10. STABILITY AND REACTIVITY

10.1. Chemical Stability	The product is stable at ambient temperature.
10.2. Hazardous Decomposition or Byproducts	None (however, see 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 with air. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welders 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:

Material Safety Data Sheet according to 91/155/EEC (preparations)/93/112/EEC (substances) as amended.
The information presented herein is believed to be accurate and reliable, but is presented without any warranty, express nor implied, on the part of Cheminova, Inc.

Product No.: 45A/4510

RRS/April 2000
Supercedes Issue Marked GHB/November 1999

Product Name: **GLYFOS® X-TRA**

Active Ingredient: Glyphosate

EPA Reg. No. **4787-23**

Page 6 of 7

Ingestion (oral)	Practically non-toxic (LD ₅₀ , rat: > 5000 mg/kg)
Skin (dermal)	Practically non-toxic (LD ₅₀ , rabbit: > 2000 mg/kg)
Inhalation	LC ₅₀ , rat: > 4.86 mg/l/4 h
Eye Irritation	May cause substantial but temporary eye injury
Skin Irritation	Practically not irritant to rabbit skin
Allergy Sensitization	No sensitizing properties towards guinea pigs in the Magnusson-Kligmann Maximization test
Carcinogenicity	EPA has classified glyphosate in category E (evidence of non-carcinogenicity for humans).

12. ECOLOGICAL INFORMATION

The active ingredient (glyphosate (acid)) is rapidly deactivated by adsorption to clay particles.

The acute toxicity of the product is:

- Fish	Rainbow Trout 96-hr LC ₅₀	18.6 mg/l (static)
	Bluegill Sunfish 96-hr LC ₅₀	11.9 mg/l (static)
- Invertebrates	<i>Daphnia magna</i> 48-hr EC ₅₀	21.6 mg/l
- Birds	Bobwhite quail and mallard duck LD ₅₀	> 2000 mg/kg (glyphosate (acid))
- Algae	Algae 72-hr EC ₅₀	17.4 mg/l
- Bees	Honey Bees , LD ₅₀ , oral	> 100 µg/bee

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. However, procedures in accordance with state and local regulations must be observed.
--------------------------	--

Product No.: 45A/4510

RRS/April 2000

Supercedes Issue Marked GHB/November 1999

Product Name: **GLYFOS® X-TRA**

Active Ingredient: Glyphosate

EPA Reg. No. **4787-23**

Page 7 of 7

14. TRANSPORT INFORMATION

UN CLASSIFICATION: Not classified as hazardous material for transport.

15. REGULATORY INFORMATION

15.1. IN THE EU:

Classification and Labeling

(according to 88/379/EEC as amended): None

15.2.	Threshold Limit Value	OSHA PEL (USA) n.a.	ACGIH TLV (USA) n.a.	MAK (Germany) n.a.	HGV (Denmark) n.a.	Others -
-------	-----------------------------	---------------------------	----------------------------	--------------------------	--------------------------	-------------

However, threshold limit values defined by local regulations must be observed.

16. OTHER INFORMATION

Emergency Medical Telephone Number 1-800-228-5635, Ext. #153

Other Emergencies in the US CHEMTREC toll free 1-800-424-9300

Telephone Number for Information in the US (973) 305-6600

Emergency Telephone Number in Denmark (+45) 97835353 (Cheminova, Denmark)

Material Safety Data Sheet according to 91/155/EEC (preparations)/93/112/EEC (substances) as amended.

The information presented herein is believed to be accurate and reliable, but is presented without any warranty, express nor implied, on the part of Cheminova, Inc.