

Product No.: TG2000

February 2019
Supersedes: May 2017

Product Name: GlySil™ Forestry Herbicide
Active Ingredient: Glyphosate
PCP Reg No. 29009

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MATERIAL SAFETY DATA SHEET

GlySil™ Forestry Herbicide

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

Product Name: GlySil™ Forestry Herbicide

Telephone Number in Canada: (250) 924-8080
 Address: **TeraGro Inc.**
 Fax Number in Canada: n/a P.O. Box 192
 Emergencies: CANUTEC (613) 996-6666 Ladysmith, B.C. V9G 1A2
 Other information in Canada: (250) 924-8080 www.teragro.com

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)-	Glycine, N-(phosphonomethyl), Compd. with 2-propanamine (1:1)
ISO Name	Glyphosate	Not available
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	$\begin{array}{c} \text{HO} \\ \diagdown \\ \text{P}=\text{O} \\ \diagup \\ \text{HO} \end{array} \text{CH}_2\text{-NH-CH}_2\text{-COOH}$	$\begin{array}{c} \text{HO} \\ \diagdown \\ \text{P}=\text{O} \\ \diagup \\ \text{HO} \end{array} \text{CH}_2\text{-NH-CH}_2\text{-COO}^- + \text{NH}_3\text{-CH(CH}_3)_2$

2.2. TYPICAL CONTENT:

Active Ingredient Glyphosate, N-(phosphonomethyl)glycine*, as its isopropylamine salt 30 – 60% by weight
 *(Contains 450 g/l of the active ingredient glyphosate in the form of its isopropylamine salt, equivalent to about 356 g/l of the acid, glyphosate)

Inert Ingredients Tallow alkylamine ethoxylate (CAS 61791-26-2) 7 – 13% by weight

Material Safety Data Sheet meeting the requirements of the Hazardous Products Act and Controlled Products Regulation. The information presented herein is believed to be accurate and reliable, but is presented without guarantee or responsibility on the part of TeraGro Inc.

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- 2.3. Material Use Herbicide
- 2.4. US Classification Toxicity Category II, Signal Word: Warning
- 2.5. Classification – Canada WHMIS Pesticide products are exempted from WHMIS. However, the product would meet the criteria of the CPR of Class D, Division 1, Subdivision B if it were classified as a Controlled Product.
- 2.6. HMIS Ratings 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 Skin contact and inhalation
 - 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.
 - If Inhaled Remove individual to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.
 - If in contact with skin Wash with plenty of soap and water. Get medical attention if irritation persists.

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.

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 a full facepiece 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 attapulgitite, 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.

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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 Not applicable.

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 approved by NIOSH/MSHA or by the local authorities.

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 safety glasses with sideshields meeting CSA or ANSI standards or chemical splash goggles.

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.

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- 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 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 – Brown colored
- 9.3. Odor Practically odorless to slight amine-like odor
- 9.4. Melting Point Occurs in 2 steps, 143-164°C and 189-223°C
- 9.5. Boiling Point 113°C
- 9.6. Specific Gravity 1.16 g/cm³ 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 Not available
- 9.14. Flammable Limits Not applicable

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.

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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:

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.

14. TRANSPORT INFORMATION

TDG CLASSIFICATION: Not classified as hazardous material for transport.

15. REGULATORY INFORMATION

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15.1. Threshold Limit Value	OSHA PEL (USA)	ACGIH TLV (USA)	MAK (Germany)	Others
	Not established	Not established	Not established	Not established

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

16. OTHER INFORMATION

This MSDS is intended for worker and transport safety. It is not intended for users of the product who should refer to the product label for safety precautions applicable to them. Some safety equipment and procedure recommendations in this MSDS differ from the product label because they are intended for a different audience.

This material should only be handled by persons who are made aware of its hazardous properties and have been instructed in the required safety precautions.