



MATERIAL SAFETY DATA SHEET

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Glyphosate Original

Date Prepared: January 31, 2000

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: Glyphosate Original

HAZARD CLASSIFICATION (0-minimal, 1-slight, 2-moderate, 3-serious, 4-severe)

NFPA: HEALTH-1 FIRE-1 REACTIVITY-0

HMIS: HEALTH-1 FIRE-1 REACTIVITY-0

MANUFACTURER NAME AND ADDRESS

Griffin L.L.C.	Griffin (Europe) S.A.	Griffin FE (Malaysia) S/B
2509 Rocky Ford Road	c/o Minervastraat 8	P.O. Box 6506
P.O. Box 1847	B-1930 Zaventem	47300 KG Tunku
Valdosta, GA 31603-1847	Belgium	Petaling Jaya
		Malaysia

EMERGENCY TELEPHONE NUMBERS

Griffin L.L.C. (USA): (+1) (800) 237 1854

Griffin (Europe) S.A.: (+32)-2-720 6644

Griffin FE (Malaysia) S/B: (+60)-3-757 4773

Chemtrec: (+1) (800) 424 9300

2. COMPOSITION/ INFORMATION ON INGREDIENTS

Component Name	% by Wt.	CAS#	ACGIH (TLV)	OSHA (PEL)
Glyphosate IPA Salt	41.0	38641-94-0	not established	not established
Inert Ingredients	59.0			

Components not precisely identified are proprietary or not hazardous.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Warning! Causes eye irritation. Harmful if swallowed or inhaled. May cause skin irritation.

POTENTIAL HEALTH EFFECTS

Inhalation: Occupational exposure to this product has been reported to cause respiratory tract irritation. Symptoms include coughing, sneezing, wheezing, and blood-tinged mucous.

Eye Irritation: Direct contact may cause temporary eye irritation and conjunctivitis.

Skin Absorption: Prolonged contact may cause skin irritation.

Hazards Identification continued:

Griffin L.L.C. (USA)

Griffin (Europe) S.A.

Griffin FE (Malaysia) S/B



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Ingestion: Ingestion has been reported to produce gastrointestinal discomfort with irritation of the mouth, nausea, vomiting, and diarrhea. Oral ingestion of large quantities of concentrated product has been reported to result in hypotension and pulmonary edema.

4. FIRST AID MEASURES

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

Eye Contact: Hold eyelids open and flush with water at least 15-20 minutes until no evidence of chemical remains. Get professional medical attention immediately.

Skin Contact: Remove contaminated clothing and shoes. Wash with plenty of soap and water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention immediately.

Ingestion: This material will produce gastrointestinal irritation. Immediately dilute by swallowing water or milk. Do not attempt to give anything by mouth to an unconscious person. Get professional medical attention immediately.

5. FIRE FIGHTING MEASURES

Flash Point & Method: > 200° F - tag closed cup
Flammable Limits: Not applicable.
Autoignition Temperature: Not applicable.

FIRE FIGHTING HAZARDS & PROCEDURES

Extinguishing Media: Use dry chemical, carbon dioxide, water spray or foam.
Fire Fighting Instructions: Firefighters or others who may be exposed to vapors or products of combustion should wear full protective clothing and self-contained breathing apparatus. Equipment should be thoroughly cleaned after each use.

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Liquid spills on the floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgate, bentonite, or other absorbent clays.

Accidental Release Measures continued:



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Spill or leak procedures: Collect contaminated absorbent, place in plastic-lined metal drum, and dispose of in accordance with instructions provided under DISPOSAL. Thoroughly scrub floor with a strong industrial type detergent solution and rinse with warm water. Liquid spills that soak into the ground should be dug-up, placed in plastic-lined metal drums, and disposed of in accordance with instructions provided under DISPOSAL. Leaking containers should be separated from non-leakers and either the container or its contents transferred to a plastic-lined drum or tother non-leaking container. Dispose of leaking container in accordance with instructions provided under DISPOSAL. Any received spilled liquid should be similarly collected and disposed of.

7. HANDLING AND STORAGE

General Information: Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or spray mist. Use with adequate ventilation. Keep container closed. Wash thoroughly after handling. Avoid contamination of seed, feed, or foodstuffs.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

PESTICIDE APPLICATORS & WORKERS

These workers must refer to the Product Label and Directions For Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170.

MANUFACTURING, COMMERCIAL BLENDING, & PACKAGING WORKERS

Ventilation: No special precautions are recommended.
Respiratory Protection: Respiratory protection should not be required for normal use and handling. During period of abnormal exposure to heavy spray or mist, use NIOSH/MSHA approved equipment for pesticide vapor/mist is recommended. The respirator use limitations specified by NOISH/MSHA or the manufacturer must be observed.
Eye Protection: Wear chemical safety goggles during mixing/pouring operations or other activities in which eye contact with undiluted material is likely to occur.

Exposure Control / Personal Protection continued:

Protective Clothing: In cases in which prolonged or repeated skin contact with this material may occur, long-sleeved shirt, long



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pants, and chemical protective (e.g. rubber) gloves are recommended. Wash hands and contaminated skin after handling. Clothing soaked with a solution of this material should be promptly removed and laundered before reuse.

Airborne Exposure Limits: See Section 2

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity (water = 1): 1.17
pH: 4.4 – 4.9
Odor: Odorless to slight amine-like odor
Color: Clear to Amber
Physical State: Viscous Solution

10. STABILITY AND REACTIVITY

General: This material is stable for at least five years under normal conditions of warehouse storage. Heated facilities are not required.

Incompatible Materials: Spray solutions of this product should be mixed, stored, or applied only in stainless steel, aluminum, fiberglass, plastic, and 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, 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 cigarette, or other ignition source.

Hazardous Decomposition: None determined

Hazardous Polymerization: Material is not known to polymerize. 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

ACUTE

Inhalation: Slightly toxic LC₅₀ = 3.18 mg/L (rat)
Eye Irritation: Moderately irritating.
Skin Irritation: Slightly irritating (rabbit – 4-hour exposure)



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Skin Absorption: Practically non-toxic (rabbit LD₅₀: >5000 mg/kg).
Ingestion: Slightly toxic to practically non-toxic (rat LD₅₀: 5000 mg/kg, mouse LD₅₀ > 5000 mg/kg).

No skin irritation, allergy, or photoallergy was reported in human volunteers following repeated skin exposure. No skin irritation or photoirritation was reported with single skin exposure. No skin allergy was observed in guinea pigs following repeated skin exposure.

Following repeated skin exposure (3-week) to this material at 5-times the intended use concentration, severe skin irritation and systemic toxic effects (death, reduced food consumption, body weight loss, and testicular effects) were observed in rabbits. Slight to moderate skin irritation was the only effect in rabbits treated with 3-times the intended use concentration. Systemic toxic effects at 5-times use concentration were considered to be a secondary response to the stress of severe skin irritation, to which rabbits are particularly sensitive, rather than the result of direct systemic toxicity. There was no evidence of cholinesterase inhibition in dogs (single oral doses). Minor nasal irritation was observed following repeated inhalation (4-weeks) of a 33% solution of this material by rats. When this material was applied to skin or rhesus monkeys, an extremely low amount (1.8%) of the active ingredient was absorbed.

Isopropylamine Salt of Glyphosate

This material was practically nontoxic orally (rats) or after skin application (rabbits). It was nonirritating to rabbit eyes, and practically nonirritating to rabbit skin. In repeat dosing studies (8-month), dogs fed this material exhibited slight body weight changes. Following repeated skin exposure (3-weeks) to this material, skin irritation was the primary effect in rabbits. Additional toxicity information is available on glyphosate, the active herbicidal ingredient of isopropylamine salt of glyphosate; which has been tested in mutagenicity, teratogenicity, reproductive, acute, subchronic, and chronic toxicity studies.

Surfactant

The surfactant component of this material 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

Oral LD₅₀ Dog: >5.0 ml/kg (practically non-toxic)
Oral LD₅₀ Goat: 4660 mg/kg (slightly toxic)
48-hour Oral LD₅₀ Honeybee: >100 µg/bee

Ecological Information continued:

48-hour Dermal LD₅₀ Honeybee: > 100 µg/bee
48-hour EC₅₀ *Daphnia magna* (with aeration): 37 mg/L (slightly toxic)
48-hour EC₅₀ *Daphnia magna* (w/out aeration): 24 mg/L (slightly toxic)
48-hour EC₅₀ *Gammarus pseudolimnaeus*: 42 mg/L (slightly toxic)
96-hour TL₅₀ Carp: 19.7 ppm (slightly toxic)
96-hour LC₅₀ Crayfish: > 1000 ppm (practically non-toxic)



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96-hour LC ₅₀ Fathead Minnow:	9.4 mg/L (moderately toxic)
96-hour LC ₅₀ Rainbow Trout (static):	15.26 mg/L (slightly toxic)
96-hour LC ₅₀ Rainbow Trout (flow-through):	8.2 mg/L (moderately toxic)
96-hour LC ₅₀ Bluegill Sunfish (static):	14 mg/L (slightly toxic)
96-hour LC ₅₀ Bluegill Sunfish (flow-through):	5.8 mg/L (moderately toxic)
96-hour LC ₅₀ Channel Catfish:	16 mg/L (slightly toxic)
96-hour LC ₅₀ Coho Salmon:	22 mg/L (slightly toxic)
96-hour LC ₅₀ Chinook Salmon:	20 mg/L (slightly toxic)

Carp contained in a static pond were unaffected at any time during a 90-day observation period following exposure by aerial application of this material at the normal use concentration. Tissue residue analyses indicated that glyphosate, the active ingredient in this material will not bioaccumulate.

Exposure to this material in freshwater at concentrations of 0, 10, 103, and 990 µg/L for 10 days did not impair the ability of salmon smolts to adapt to seawater.

Immersion of chicken eggs at four different embryo ages (0, 6, 12, and 18 days) for about five seconds in 1 or 5% vol/vol material in water solutions was reported to have no adverse effects on the hatchability or time to hatch of the eggs.

Brahman-cross heifers were given this material by gavage, at daily dosages of 0, 400, 500, 630, 790, and 1000 mg/kg for 7 consecutive days. Clinical signs of toxicity, including loss of appetite, diarrhea, and death (790 and 1000 mg/kg) were observed at 500 mg/kg or above. The no-effect level was considered to be 400 mg/kg/day.

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 in accordance with applicable Federal, State, or Local procedures.

An empty container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.

Disposal Considerations continued:

Metal drums:	Triple rinse container, and then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
Plastic Jugs:	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.



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Metal Bulk:	Triple rinse emptied bulk containers, and then offer for recycling or reconditioning or disposal in a manner approved by state and local authorities.
Plastic Drums/ Mini-Bulk:	Do not reuse container. Triple rinse the 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

Department of Transportation (DOT):	Not Regulated
International Air Transport Association (IATA):	Not Regulated
International Maritime Organization (IMO):	Not Regulated

15. REGULATORY INFORMATION

OSHA:	This product is considered hazardous under the OSHA Hazardous Communication Standard (29 CFR §1910.1200).
TSCA:	All product components are on the TSCA Chemical Inventory.
CERCLA:	Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to the state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304.
RCRA:	When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR §261.33.

Regulatory Information continued:

SARA TITLE III

302:	Not listed
311/312 Hazard Categories:	This product has been reviewed according to the EPA "Hazard Categories" relating to SARA Title III, and is categorized as an acute health hazard (40 CFR §370.41).
313 Reportable Ingredients:	This product does not contain any material listed in Section 313 above de minimis concentrations (40 CFR §372).



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16. OTHER INFORMATION

REVISION SUMMARY

This Material Safety Data Sheet has been prepared using the standard Griffin L.L.C. ANSI Z400.1 compliant format.

The information in this Material Safety Data Sheet relates to this specific material. It may not be valid for this material if used in combination with any other materials or in any process. It is the users' responsibility to satisfy themselves as to the suitability and completeness of this information for their own particular use.