



MATERIAL SAFETY DATA SHEET

PT. Monagro Kimia

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Medical Emergency Number :
RS. Siloam Gleneagles Lippo Karawaci
+62-(021)-546-0066

SGS Alert
008-800-650-7576
001-803-65-7576 (Toll Free)

1. CHEMICAL PRODUCT IDENTIFICATION

PRODUCT NAME : Roundup PowerMAX®
CHEMICAL FAMILY : Glyphosate
CHEMICAL NAME : Mixture
SYNONIMS : None

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	% by weight (approx.)
Active Ingredient : Glyphosate, N-(phosphonomethyl)glycine in the form of potassium salt	70901-12-1	48.9%
Inert ingredients :	+	51.1%
		100.0%

- * Hazardous chemical(s) under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
+ The specific chemical identity is being withheld because it is trade secret information of Monsanto Company. It contains surfactant, 10% b.w. and water.

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and odor (color/form/odor) : Blue solution/ Liquid / Slight

Classified as hazardous according to criteria of NOHSC

Causes moderate eye irritation

Poison Schedule: S5 (NOT TO BE TAKEN)



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Potential Health Effects

Likely route of exposure

Skin contact, eyes contact

Eye contact, short term

Moderate eye irritation effects can be observed

Skin contact, short term

Moderate skin irritation effects are possible for the concentrate. Not expected to produce significant adverse effects when recommended use instructions are followed.

Inhalation, short term

May be mildly irritating to mucous membranes if inhalation occurs.

Single ingestion

Harmful if swallowed

Causes gastrointestinal tract irritation

Refer to section 11 for Toxicological and section 12 for Ecological information.

4. FIRST AID MEASURES

If poisoning occurs, contact a doctor or Siloam Hospital Karawaci – Tangerang at (021)-546-0066.

Eye contact

Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses.

Skin contact

Take off contaminated clothing, wristwatch, and jewelry. Wash affected skin with plenty of water. Wash clothes before reuse. If irritation persists, seek medical advice.

Inhalation

Remove to fresh air.

Ingestion

Immediately offer water to drink. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. DO NOT induce vomiting unless directed by medical personnel. If symptoms occur, get medical attention.

Advice to doctor

This product is not an inhibitor of cholinesterase.

Antidote

This product is not an inhibitor of cholinesterase. Treatment with atropine and oximes is not indicated

5. FIRE FIGHTING MEASURES

Flash point: do not flash.

Extinguishing media: if involved in a fire, Roundup PowerMAX® will not burn. Choose an extinguishing material to suit the burning material. Recommended: water, foam, dry chemical, carbon dioxide (CO₂)



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Unusual fire and explosion hazards: none. Environment precaution: see section 6.

Hazardous products of combustion: carbon monoxide (CO), nitrogen oxides NO_x, and phosphorous oxide (P_xO_y)

Fire fighting equipment: self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protection recommended in section 8.

Environmental Precautions

Minimize spread. Keep out of drains, sewers, ditches and water ways

Method for cleaning up

Absorb in earth, sand or absorbent material. Dig up heavily contaminated soil. Collect in containers for disposal. Refer to section 7 for types of containers. Flush residues with small quantities of water. Minimize use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling:

For Personal Protective Equipment (PPE) guidelines and hygiene advice, refer to section 8. When using, do not eat, drink, or smoke. Wash hands thoroughly after handling or contact. Thoroughly clean equipment after use. Do not contaminate drains, sewers, and water ways when disposing of equipment rinse water. Emptied containers retain vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Storage

Minimum storage temperature: 0°C. Maximum storage temperature: 50°C. Keep product in the original packaging. Incompatible materials for storage: galvanized steel, unlined mild steel, see section 10. Keep out of reach of children. Keep away from food, drink, and animal feed. Shelf life: 5 years (using normal conditions of warehouse storage).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Potassium salt of Glyphosate	No specific occupational exposure limit has been established
Water and minor formulating ingredients, including surfactant	No specific occupational exposure limit has been established



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Engineering Controls

No special requirement or ventilation required when used as recommended.

Eye Protection

Wear a face shield or chemical safety goggles to prevent eye contact where contact with undiluted product may occur. Have eye flushing material available.

Skin Protection

Although this product does not present a significant skin concerns, minimize skin contact by following good industrial hygiene practice. When handling undiluted product, wear rubber gloves. Wash hands and contaminated skin thoroughly after handling:

Respiratory Protection

Respiratory protection should not be required for normal use and handling. Avoid breathing spray mist. During period of abnormal exposure to heavy spray mist, use of respiratory equipment approved for pesticide mist/spray is recommended. Consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

Those 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.

Appearance	: clear, blue color solution
Odor	: slight
Flash point	: does not flash
Specific Gravity	: 1.35 at 20/20°C
Solubility in water	: completely miscible
pH (6.3% solution in water)	: 4.5 – 4.8
Partition coefficient (log Pow)	: -3.2 at 25°C (Glyphosate)
Volatile Component	: ~40% (water is volatile material)

10. STABILITY AND REACTIVITY

Stability

This product is stable under normal condition of storage and handling.

Hazardous decomposition

Thermal decomposition that could occur if involved in a fire fueled by other flammable material. Hazardous products of combustion: see section 5.

Material to avoid/Reactivity

REACTS WITH GALVANISED STEEL OR UNLINED MILD STEEL TO PRODUCE HYDROGEN, A HIGHLY FLAMMABLE GAS THAT COULD EXPLODE IF IGNITED.

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11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologist and other health professionals.
Data obtained on similar products and on components are summarized below,

Similar formulation

Acute oral toxicity

Rat LD₅₀ : > 5,000 mg/kg, body weight

Practically non-toxic

FIFRA Category IV

No mortality

Acute dermal toxicity

Rat LD₅₀ : >5,000 mg/kg, body weight

Practically non-toxic,

FIFRA Category IV

Skin irritation

Rabbit, 6 animals, OECD 404 test

Days to heal: 14

Primary Irritation Index (PII): 2.2/8.0

Moderate irritation

FIFRA Category III

Eye irritation

Rabbit, 3 animals, OECD 405 test

Days to heal: 3

Moderate irritation

FIFRA Category III

Acute inhalation toxicity

Rat LC₅₀, 4 hours, aerosol: > 1.2 mg/L

Slightly toxic.

FIFRA Category IV.

No mortality. For purposes of the inhalation test, product was artificially aerosolized. Since this material will not become aerosolized to a hazardous concentration during transport, it is classified as non-hazardous under the transportation regulations in accordance with 2.6.2.2.4.7(b) and (c) of the UN Recommendations on the Transport of Dangerous Goods.

Skin sensitization

Guinea pig, Buchler test:

Positive incidence: 0%.

N-(phosphonomethyl glycine) {glyphosate}

Mutagenity

In vitro and in vivo mutagenicity test(s):

Not mutagenic



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Repeated dose toxicity

Rabbit, dermal, 21 days

NOAEL toxicity: > 5000 mg/kg body weight day

Target organs/system: none

Other effects: none

Rat, oral, 3 months

NOAEL toxicity: > 20.000 mg/kg diet

Target organs/system: none

Other effects: none

Chronic effects/carcinogenicity

Mouse, oral, 24 months

NOAEL toxicity: ~ 5.000 mg/kg diet

Target organs/system: liver

Other effects: decrease of body weight gain, histopathologic effects

NOAEL tumor: > 30.000 mg/kg diet

Tumors: none

Rat, oral, 24 months

NOAEL toxicity: ~ 8.000 mg/kg diet

Target organs/system: eyes

Other effects: decrease of body weight gain, histopathologic effects

NOAEL tumor: > 20.000 mg/kg diet

Tumors: none

Toxicity to reproduction/fertility

Rat, oral, 2 generations

NOAEL toxicity: 10.000 mg/kg diet

NOAEL reproduction: > 30.000 mg/kg diet

Target organs/system in parents: none

Other effects in parents: decrease of body weight gain

Target organs/system in pups: none

Other effects in pups: decrease of body weight gain

Effects on offspring only observed with maternal toxicity

Developmental toxicity/teratogenicity

Rat, oral, 6 – 19 days of gestation

NOAEL toxicity: 1.000 mg/kg body weight. NOAEL development: 1.000 mg/kg body weight

Other effects in mother animal: decrease of body weight gain, decrease of survival

Developmental effects: weight loss, post-implantation loss, delayed ossification

Effects on offspring only observed with maternal toxicity

Rabbit, oral, 6 – 27 days of gestation

NOAEL toxicity: 175 mg/kg body weight. NOAEL development: 175 mg/kg body weight

Target organs/system in mother animal: none

Other effects in mother animal: decrease of survival

Developmental effects: none

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12. ECOLOGICAL INFORMATION

General Precautions:

Do not spray in high wind. Glyphosate is non-selective contact herbicide. Spray drift can cause damage to other plants.

This section is intended for use by ecotoxicologist and other environmental specialist.

Data obtained on similar products and on components are summarized below:

Similar formulation

Aquatic toxicity, fish

Rainbow trout (*Oncorhynchus mukiss*)

Acute toxicity: 96 hours, static, LC₅₀: 3.13 mg/L

Moderately toxic

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*)

Acute toxicity: 48 hours, static, LC₅₀: 8.0 mg/L

Moderately toxic

Arthropod toxicity

Honey bee (*Apis mellifera*)

Oral: 48 hours, LD₅₀: > 238.8 µg/bee

Practically non-toxic

Honey bee (*Apis mellifera*)

Contact: 48 hours, LD₅₀: > 250 µg/bee

Practically non-toxic

Aquatic toxicity, algae/aquatic plants

Green algae (*Selenastrum capricornutum*)

Acute toxicity: 72 hours, static, EbC₅₀ (biomass): 0.124 mg/L

Highly toxic

Soil organism toxicity, invertebrates

Earth worm (*Eisenia foetida*)

Acute toxicity: 14 days, LC₅₀: > 10.000 mg/kg dry soil

Practically non-toxic

Soil organism toxicity, microorganism

Nitrogen and carbon transformation test:

40 L/ha, 28 days: Less than 25% effect on nitrogen or carbon transformation process in soil

N-(phosphonomethyl glycine) {glyphosate}

Avian toxicity, fish

Bobwhite quail (*Colinus virginianus*)

Dietary toxicity: 5 days, LC₅₀: > 4.640 mg/kg diet

No more than slightly toxic

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Mallard duck (*Anas platyrhynchos*)

Dietary toxicity: 5 days, LC₅₀: > 4.640 mg/kg diet

No more than slightly toxic

Bobwhite quail (*Colinus virginianus*)

Acute oral toxicity: single dose, LD₅₀: > 3.851 mg/kg body weight

Practically non-toxic

Bio-accumulation

Bluegill sunfish (*Lepomis macrochirus*)

Whole fish, BCF: < 1

No significant bio-accumulation is expected

Dissipation

Soil, field:

Half-life: 2 – 174 days

Koc: 884 – 60.000 L/kg

Adsorbs strongly to soil

Water, aerobic:

Half-life: < 7 days

13. DISPOSAL CONSIDERATIONS

Product

Keep out of drains, sewers, ditches, and water ways. On site disposal of concentrated product is not approved. Ideally the product should not be used for its intended use as a herbicide. If there is a need to dispose of product, use local collections of unwanted chemicals.

Container

See the individual container label for disposal information. Emptied containers retain vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Empty the packaging completely. Triple or pressure rinse empty containers if possible. Do NOT contaminate water when disposing of rinse waters. Ensure packaging can not be reused. Storage for collection by approved waste disposal service. Recycle if appropriate facilities equipment available. Follow all local/regional/national/international regulations.

14. TRANSPORT INFORMATION

U.N. Number	Not allocated
Proper Shipping Label	Not allocated
DG Class	Not allocated
Hazchem Code	Not allocated
Packaging	Not allocated
Storage & Transport	Considered non-dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road or Rail
	Considered non-dangerous for transport by the Indonesian Act for the Transport of Dangerous Goods by Road or Rail



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15. REGULATION INFORMATION

Risk Phrase	R41 Risk of eye damage Toxic or harmful to aquatic organism
Safety Phrase	S2 Keep out of reach of children
Poison Schedule	S5 (NOT TO BE TAKEN)
Hazard Category	Xi Irritant
Packaging & Labeling	CAUTION KEEP OUT OF REACH OF CHILDREN READ DAFETY DIRECTIONS BEFORE OPENING OR USING

Registered pesticide

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data. Follow all local/regional/national/international regulations. Please consult supplier if further information is needed.

Full denomination of most frequently used acronyms:

BCF	: Bio Concentration Factor
EC₅₀	: 50% Effect Concentration
ED₅₀	: 50% Effect Dose
FIFRA	: Federal Insecticide, Fungicide and Rodenticide Act
LC₅₀	: 50% Lethality Concentration
LD₅₀	: 50% Lethality Dose
NOAEL	: No Observed Adverse Effect Level

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

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