

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-424-9300
Repar Corporation
Silver Spring, MD 20914

Effective Date: December 2009

TOP DOG GLYCEL 41% PLUS

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: TOP DOG GLYCEL 41% PLUS

EPA Reg. No.: 86004-3-69361

PRODUCT DESCRIPTION: Herbicide

COMPANY IDENTIFICATION:

Repar Corporation
PO Box 4321
Silver Spring, MD 20914

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY PHONE NUMBER: (800) 424-9300
(CHEMTREC, transportation and spills)

EMERGENCY OVERVIEW:

PHYSICAL APPEARANCE: Yellow or off-white hazy liquid.

IMMEDIATE CONCERNES: CAUSES EYE IRRITATION. AVOID CONTACT WITH EYES OR CLOTHING. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

KEEP OUT OF REACH OF CHILDREN

3. COMPOSITION/INFORMATION ON INGREDIENTS:

ACTIVE INGREDIENT: Isopropylamine salt of N-(phosphonomethyl)glycine: (Isopropylamine salt of glyphosate)

| COMPONENT | CAS # | W/W% |
|-----------------------------------|-----------|------|
| Isopropylamine salt of glyphosate | 3641-94-0 | 41 |
| Other Ingredients | | 59 |

4. FIRST AID

EYES: Immediately flush with plenty of water. Continue for at least 15 minutes. If easy to do, remove contact lenses. If there are persistent symptoms, obtain medical advice.

SKIN: Wash affected skin with plenty of water. Wash clothes before re-use. Take off contaminated clothing, wristwatch, jewelry.

INGESTION: Immediately offer water to drink. Do NOT induce vomiting unless directed by medical personnel. If symptoms occur, get medical attention.

INHALATION: Remove to fresh air.

ADVICE TO DOCTORS: This product is not an inhibitor of cholinesterase.

ANTIDOTE: Treatment with atropine and oximes is not indicated.

5. FIRE FIGHTING MEASURES:

FLASH POINT: Does not flash.

EXTINGUISHING MEDIA: Recommended: Water, dry chemical, carbon dioxide (CO₂), foam

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS PRODUCTS OF COMBUSTION: Carbon monoxide (CO), nitrogen oxides (NO_x), phosphorus oxides (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.

SMALL QUANTITIES: Low environmental hazard.

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

METHODS FOR CLEANING UP:

SMALL QUANTITIES: Flush spill area with water.

LARGE QUANTITIES: Absorb in earth, sand or absorbent material. Dig up heavily contaminated soil. Collect in containers for disposal. Refer to Section 7 for

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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:

HANDLING: Good industrial practice in housekeeping and personal hygiene should be followed. Avoid contact with skin and eyes. When using do not eat, drink or smoke. Wash hands thoroughly after handling or contact. Thoroughly clean equipment after use. Emptied containers retain vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. FOLLOW LABELED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.

STORAGE: Compatible materials for storage: stainless steel, aluminum, plastic, fiberglass, glass lining. 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. Keep only in the original container. Partial crystallization may occur on prolonged storage below the minimum storage temperature. If frozen, place in warm room and shake frequently to put back into solution. Minimum shelf life: 5 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

AIRBORNE EXPOSURE LIMITS:

Components

Isopropylamine salt of glyphosate
Limit has been established
Surfactant
Limit has been established
Water
Limit has been established

Exposure Guidelines

No specific occupational exposure
No specific occupational exposure
No specific occupational exposure

ENGINEERING CONTROLS: Have eye wash facilities immediately available at locations where eye contact can occur.

EYES PROTECTION: If there is potential for contact, wear chemical goggles.

SKIN PROTECTION: If repeated or prolonged contact, wear chemical resistant gloves.

RESPIRATORY PROTECTION: No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES:

These 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.

PHYSICAL STATE: Liquid

ODOR: Slight

FLASH POINT: Does not flash

SPECIFIC GRAVITY: 1.1655 @ 20°C/15.6°C

pH: 4.4 – 5.0

PARTITION COEFFICIENT (Log Pow): <0.000 (active ingredient)

10. STABILITY AND REACTIVITY:

STABLE: Stable under normal conditions of handling and storage.

HAZARDOUS DECOMPOSITION: Thermal decomposition: No data. Hazardous products of combustion: see Section 5.

MATERIALS TO AVOID/REACTIVITY: Reacts with bases to liberate heat. Reacts with galvanized steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

HAZARDOUS POLYMERIZATION: Does not occur.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals. Data obtained on product or on similar products are summarized below. Data obtained on active ingredient are summarized below.

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Acute oral toxicity

Rat, LD50 (limit test): > 5,000 mg/kg body weight
Other effects: breathing difficulty, decreased activity,
soft stools
Practically non-toxic.
FIFRA category IV.
No mortality.

Acute dermal toxicity

Rat, LD50 (limit test): > 5,000 mg/kg body weight
Target organs/systems : None.
Other effects: None.
Practically non-toxic.
FIFRA category IV.
No mortality.

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol: 2.6 mg/L
Target organs/systems : None.
Other effects: breathing difficulty, decreased activity,
local effects
local effects
Practically non-toxic.
FIFRA category IV.

Skin irritation

Rabbit 6 animals, OECD 404 test
Days to heal: 1
Primary Irritation Index (PII): 0.4/8.0
Other effects: None.
Essentially non irritating.
FIFRA category IV.

Eye irritation

Rabbit 6 animals , OECD 405 test
Days to heal: 10
Moderate irritation.
FIFRA category II.

Skin sensitization

Guinea pig, Buehler test Positive incidence: 0 %

EXPERIENCE WITH HUMAN EXPOSURE

Ingestion, short term. case report(s):

Gastro-intestinal effects: irritation, nausea/vomiting,
diarrhea

Ingestion, short term:

Respiratory effects: increased fluid in lungs
(lung/pulmonary oedema)
Cardiovascular effects: decreased blood pressure
(hypotension)

Similar formulation

Acute oral toxicity

Rat, LD50: 5,000 mg/kg body weight
Slightly toxic. FIFRA category III.

Acute dermal toxicity

Rabbit LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic. FIFRA category IV. No
Mortality.

Skin irritation

Rabbit 6 animals, OECD 404 test

Days to heal: 3
Primary Irritation Index (PII): 1.0/8.0
Slight irritation.
FIFRA category IV.

Eye irritation

Rabbit 6 animals , OECD 405 test

Days to heal: > 21
Other effects: pannus, tissue destruction in eye
(necrosis of conjunctivae)
Severe irritation. FIFRA category I.

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol: 3.28 mg/L
Practically non-toxic.
FIFRA category IV.

Skin sensitization

Guinea pig, 9-induction Buehler test
Positive incidence: 0 %

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EXPERIENCE WITH HUMAN EXPOSURE

Ingestion, excessive, intentional misuse:

Respiratory effects: pneumonitis (aspiration)

Gastro-intestinal effects: nausea/vomiting, diarrhea, abdominal pain, bloody vomiting (haematemesis)

Cardiovascular effects: abnormal heart rhythm (cardiac dysrhythmia), decreased heart output (myocardial depression)

General/systemic effects: disturbances of fluid and electrolyte regulation, abnormally decreased blood volume (hypovolaemia), elevated serum amylase, fluid loss (haemoconcentration), no cholinesterase inhibition

Laboratory effects -blood chemistry: elevated serum transaminases, mild acidosis

Eve contact short term. epidemiological:

Note: No cases of irreversible eye effects could be attributed to glyphosate formulations in an extensive epidemiological survey of reported accidental eye contact with these formulations.

N-(phosphonomethyl)glycine

Mutagenicity

In vitro and in vivo mutagenicity test(s):

Not mutagenic.

Repeated dose toxicity

Rabbit dermal, 21 days: NOEL toxicity: > 5,000 mg/kg body weight/day

Target organs/systems : None.

Other effects: None.

Rat, oral, 3 months: NOEL toxicity: > 20,000 mg/kg diet

Target organs/systems : None.

Other effects: None.

Carcinogenicity

Mouse, oral, 24 months:

NOEL tumour. > 30,000 mg/kg diet

NOEL toxicity: - 5,000 mg/kg diet

Tumours: None.

Target organs/systems : liver

Other effects: decrease of body weight gain, histopathologic effects

Rat, oral, 24 months:

NOEL tumour. > 20,000 mg/kg diet

NOEL toxicity: - 8,000 mg/kg diet

Tumours: None.

Target organs/systems: eyes

Other effects: decrease of body weight gain, histopathologic effects

Toxicity to reproduction/fertility

Rat, oral, 3 generations:

NOEL toxicity: > 30 mg/kg body weight

NOEL reproduction: > 30 mg/kg body weight

Target organs/systems in parents: None.

Other effects in parents: None.

Target organs/systems in pups: None.

Other effects in pups: None.

Developmental toxicity/teratogenicity

Rat, oral, 6 - 19 days of gestation:

NOEL toxicity: 1,000 mg/kg body weight

NOEL development: 1,000 mg/kg body weight

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

Developmental effects: weight loss, implantation loss, delayed ossification

Effects on offspring only observed with maternal toxicity.

Rabbit oral, 6 - 27 days of gestation:

NOEL toxicity: 175 mg/kg body weight

NOEL development: 175 mg/kg body weight

Target organs/systems in mother animal: None.

Other effects in mother animal: decrease of survival

Developmental effects: None.

12. ECOLOGICAL INFORMATION:

This section is intended for use by ecotoxicologists and other environmental specialists.

Aquatic toxicity, fish

Bluegill sunfish (*Lepomis macrochirus*):

Acute toxicity, 96 hours, flowthrough, LC50: 5.8 mg/L -moderately toxic

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Rainbow trout (*Oncorhynchus mykiss*):

Acute toxicity, 96 hours, flowthrough, LC50: 8.2 mg/L - moderately toxic

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*):

Acute toxicity, 48 hours, static, EC50: 12.9 mg/L slightly toxic

Aquatic toxicity, algae/aquatic plants

Green algae (*Selenastrum capricornutum*):

Acute toxicity, 96 hours, static, EC50: 2.6 mg/L moderately toxic

Avian toxicity

Bobwhite quail (*Colinus virginianus*):

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet - practically nontoxic

Mallard duck (*Anas platyrhynchos*):

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet - practically non-toxic

Arthropod toxicity

Honey bee (*Apis mellifera*):

Oral/contact, 48 hours, LD50: > 100 µg/bee - practically non-toxic

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: > 5,000 mg/kg dry soil practically non-toxic

N-(phosphomethyl)glycine: (glyphosate)

Bioaccumulation

Bluegill sunfish (*Lepomis macrochirus*):

Whole fish: BCF: < 1

No significant bioaccumulation is expected.

Dissipation

Soil, field:

Half life: 2 - 174 days

Koc: 884 - 60,000 L/kg

Binds strongly to soil.

Water, aerobic:

Half life: < 7 days

Identical product without green dye

Biodegradation

Zahn-Wellens test:

Degradation: 80 % within 28 days

Inherently biodegradable.

13. DISPOSAL CONSIDERATIONS:

Product

Dispose of as hazardous industrial waste.
Recycle if appropriate facilities/equipment available.
Burn in special, controlled high temperature incinerator.
Keep out of drains, sewers, ditches and water ways.
Follow all local/regional/national regulations.

Container

Triple rinse empty containers.
Pour rinse water into spray tank.
Store for collection by approved waste disposal service.
Dispose of as hazardous industrial waste.
Do NOT re-use containers.
Follow all local/regional/national regulations.

14. TRANSPORT INFORMATION:

The data provided in this section is for information only.
Please apply the appropriate regulations to properly classify your shipment for transportation.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

15. REGULATORY INFORMATION:

TSCA Inventory

All components are on the US EPA's TSCA Inventory

SARA Title III Rules

Section 311/312 Hazard Categories

Immediate

Section 302 Extremely Hazardous Substances

Not applicable.

Section 313 Toxic Chemical(s)

Not applicable.

CERCLA Reportable quantity

Not applicable.

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16. OTHER INFORMATION:

The information given here is not necessarily exhaustive but is representative of relevant, reliable data. For more information refer to product label. Please consult Repar if further information is needed. Follow all local/regional/national regulations.

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD

(Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), IV. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOLL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

DISCLAIMER: The information presented herein is based on available data from reliable sources and is correct to the best of Repar's knowledge. Repar Corporation makes no warranty, express or implied, regarding the accuracy of the data or the results obtained from the use of this product. Nothing herein may be construed as recommending any practice or any product in violation of any law or regulations. The user is solely responsible for determining the suitability of any material or product for a specific purpose and for adopting any appropriate safety precautions.

DATE PREPARED: December 2009