

MONSANTO Europe S.A.
Material Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name
KN 540(TM)

Product use
Herbicide

Chemical name
Not applicable.

Synonyms
None.

Company
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2. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient
Potassium salt of N-(phosphonomethyl)glycine; {Potassium salt of glyphosate}

Composition

Components	CAS No.	EINECS/ ELINCS No.	% by weight (approximate)	EU Symbols & R phrases of components
Potassium salt of glyphosate	70901-12-1		49	R52/53
Surfactant and minor formulating ingredients			11	
Water	7732-18-5	231-791-2	40	

3. HAZARDS IDENTIFICATION

Classification following the EU Dangerous Preparations' Directive 1999/45/EC.

Xi - Irritant, N - Dangerous for the environment
R38 Irritating to skin.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Potential health effects

Likely routes of exposure

Skin contact, eye contact

Eye contact, short term

Not expected to produce significant adverse effects when recommended use instructions are followed.

Skin contact, short term

Irritating to skin.

Potential environmental effects

Very toxic to aquatic organisms.
May cause long-term adverse effects in the aquatic environment.

Refer to section 11 for toxicological and section 12 for environmental information.

4. FIRST AID MEASURES

Eye contact

- 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 contact

- Immediately wash affected skin with plenty of water.
- Use soap if available.
- Take off contaminated clothing, wristwatch, jewellery.
- Wash clothes and clean shoes before re-use.
- If there are persistent symptoms, obtain medical advice.

Inhalation

- Remove to fresh air.

Ingestion

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

Advice to doctors

- This product is not an inhibitor of cholinesterase.

Antidote

- Treatment with atropine and oximes is not indicated.
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5. FIRE-FIGHTING MEASURES

Extinguishing media

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

Unusual fire and explosion hazards

- Minimise use of water to prevent environmental contamination.
- Environmental precautions: see section 6.

Hazardous products of combustion

- Carbon monoxide (CO), phosphorus oxides (P_xO_y), nitrogen oxides (NO_x)

Fire fighting equipment

- Self-contained breathing apparatus.
 - Equipment should be thoroughly decontaminated after use.
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6. ACCIDENTAL RELEASE MEASURES

Personal precautions

- Use personal protection recommended in section 8.

Environmental precautions

- SMALL QUANTITIES:
 - Low environmental hazard.
- LARGE QUANTITIES:
 - Minimise spread.
 - Keep out of drains, sewers, ditches and water ways.
 - Notify authorities.

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 types of containers.

Flush residues with small quantities of water.

Minimise 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

Avoid contact with skin and eyes.

When using do not eat, drink or smoke.

Wash hands thoroughly after handling or contact.

Wash contaminated clothing before re-use.

Thoroughly clean equipment after use.

Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.

Emptied containers retain vapour and product residue.

Refer to section 13 for disposal of rinse water.

Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.

Storage

Minimum storage temperature: -15 °C

Maximum storage temperature: 50 °C

Compatible materials for storage: stainless steel, aluminium, fibreglass, plastic, glass lining

Incompatible materials for storage: galvanised 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.

Follow all local/regional/national/international regulations.

Minimum shelf life: 5 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Potassium salt of glyphosate	No specific occupational exposure limit has been established.
Surfactant and minor formulating ingredients	No specific occupational exposure limit has been established.
Water	No specific occupational exposure limit has been established.

Engineering controls

No special requirement when used as recommended.

Eye protection

If there is significant potential for contact:

Wear chemical goggles.

Skin protection

Wear chemical resistant gloves.
Wear chemical resistant clothing/footwear.

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.

Colour/colour range:	Yellow - Orange
Form:	Liquid
Density:	1.356 g/cm ³
pH:	4.7 @ 10 g/l
Partition coefficient (log Pow):	-3.2 @ 25 °C (glyphosate)

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of handling and storage.

Hazardous decomposition

Thermal decomposition: Hazardous products of combustion: see section 5.

Materials to avoid/Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists 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

Acute dermal toxicity

Rat, LD50: > 5,000 mg/kg body weight

Skin irritation

Rabbit, 3 animals, OECD 404 test:

Redness, individual EU scores: 2.00; 1.67; 2.00

Swelling, individual EU scores: 0.00; 0.33; 0.33

Days to heal: 14

Eye irritation

Rabbit, 3 animals, OECD 405 test:

Conjunctival redness, individual EU scores: 1.00; 1.33; 1.33

Conjunctival swelling, individual EU scores: 1.00; 1.33; 1.00

Corneal opacity, individual EU scores: 0.00; 1.00; 0.00

Iris lesions, individual EU scores: 0.00; 0.33; 0.00

Days to heal: 3

Slightly irritating to eyes but not sufficient for classification.

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol: > 1.20 mg/L

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, Buehler test:

Positive incidence: 0 %

N-(phosphonomethyl)glycine; {glyphosate}

Mutagenicity

In vitro and in vivo mutagenicity test(s):

Not mutagenic.

Repeated dose toxicity

Rabbit, dermal, 21 days:

NOAEL toxicity: > 5,000 mg/kg body weight/day

Target organs/systems: none

Other effects: none

Rat, oral, 3 months:

NOAEL toxicity: > 20,000 mg/kg diet

Target organs/systems: none

Other effects: none

Chronic effects/carcinogenicity

Mouse, oral, 24 months:

NOEL tumour: > 30,000 mg/kg diet

NOAEL 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

NOAEL 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:

NOAEL toxicity: > 30 mg/kg body weight

NOAEL 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:

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/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.

Data obtained on product, similar products and on components are summarized below.

Aquatic toxicity, fish

Rainbow trout (*Oncorhynchus mykiss*):

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

Aquatic toxicity, algae/aquatic plants

Green algae (*Selenastrum capricornutum*):

Acute toxicity, 72 hours, static, ErC50 (growth rate): 0.294 mg/L

Arthropod toxicity

Honey bee (*Apis mellifera*):

Contact, 48 hours, LD50: > 250 µg/bee

Honey bee (*Apis mellifera*):

Oral, 48 hours, LD50: > 238.8 µg/bee

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: > 10,000 mg/kg dry soil

Soil organism toxicity, microorganisms

Nitrogen and carbon transformation test:

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

Similar formulation

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*):

Acute toxicity, 48 hours, static, EC50: 8.0 mg/L

N-(phosphonomethyl)glycine: {glyphosate}

Avian toxicity

Bobwhite quail (*Colinus virginianus*):

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

Mallard duck (*Anas platyrhynchos*):

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

Bobwhite quail (*Colinus virginianus*):

Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight

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

Adsorbs strongly to soil.

Water, aerobic:

Half life : < 7 days

13. DISPOSAL CONSIDERATIONS

Product

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

Container

- Triple or pressure rinse empty containers.
- Pour rinse water into spray tank.
- Store for collection by approved waste disposal service.

Dispose of as non hazardous industrial waste.
Do NOT re-use containers.
Follow all local/regional/national/international 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.

ADR/RID

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (cocofattyamine oxethylate)
UN No.: UN3082
Class: 9
Kemler: 90
Packing Group: III

IMO

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (cocofattyamine oxethylate)
UN No.: UN3082
Class: 9
Packing Group: III

IATA/ICAO

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (cocofattyamine oxethylate)
UN No.: UN3082
Class: 9
Packing Group: III

15. REGULATORY INFORMATION

Classification following the EU Dangerous Preparations' Directive 1999/45/EC.

Xi - Irritant, N - Dangerous for the environment
R38 Irritating to skin.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S35 This material and its container must be disposed of in a safe way.
S37 Wear suitable gloves.
S57 Use appropriate containment to avoid environmental contamination.

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.

In this document the British spelling was applied.

This Safety Data Sheet has been prepared following the EU Directive 91/155/EEC as amended by EU Directive 93/112/EC and EU Directive 2001/58/EC.

EU Symbols & R phrases of components

Components	EU Symbols & R phrases of components
Potassium salt of glyphosate	R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Surfactant and minor formulating ingredients	
Water	

Endnotes:

- {a} EU label (manufacturer self-classification)
- {b} EU label (Annex I)
- {c} National classification

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), I.V. (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), LOEL (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)

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.