



MATERIAL SAFETY DATA SHEET

NUFOSAT 480 SL HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

Trade name : NUFOSAT 480 SL

Use : a soluble concentrate, non selective, systemic post emergence herbicide with slight or no soil activity for the control of perennial and annual weeds in agriculture as well as in non-crop and industrial areas.

COMPANY IDENTIFICATION:

PT. Nufarm Indonesia
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Email : plant.merak@id-nufarm.com

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Active ingredient

Chemical Name : Isopropylamine salt of N-(phosphonomethyl)glycine; [Isopropylamine Salt of glyphosate]

Chemical Formula $C_6H_{17}N_2O_5P$ (Mol. wt.: 228.2)

Composition

COMPONEN	CAS No	% by weight
Isopropylamine salt of glyphosate	38641-94-0	41
Other ingredients		59

3. HAZARDS IDENTIFICATION

Environmental hazard : Harmful 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 : May cause temporary eye irritation

Skin Contact, short term : Not expected to produce significant adverse effects when recommended use instructions are followed

Inhalation, short term : Not expected to produce significant adverse effects when recommended use instructions are followed

4. FIRST AID MEASURES

First aid

Inhalation : Remove victim to fresh air. If breathing is difficult: artificial respiration
Get medical attention.

Ingestion : Wash out mouth with plenty of water. Never give anything by mouth to an unconscious person. Get medical attention.

Skin contact : Remove contaminated clothing and shoes. Wash away remainder with
Plenty of water.

Eye contact : Wash out with plenty of water with the eyelid held wide open for at least 15 minutes, get medical attention.

Note to physician : No specific antidote known. Treat symptomatically and give supportive
Therapy.

Protection of first-aiders : Use appropriate protection (see section 8).

Advice to doctors : This product is not an inhibitor of cholinesterase

5. FIRE-FIGHTING MEASURES

Extinguishing media : For small fire : dry chemical powder , water spray carbon dioxide
For large fire : foam , water fog , water spray.

Hazardous decomposition products : Phosphorus oxides , nitrogen oxides (NO, NO₂...) ,
Carbon oxides (CO, CO₂) .

Protection of fire-Fighters : Self-contained breathing apparatus and total protection required
in enclosed areas.

Flash point : Does not flash

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Wear suitable protective clothing, gloves and eye/face protection.

Environmental Precautions : Do not empty into drains. Do not discharge into the
environment.

After spillage and/or leakage : Absorb in sand or other inert material. Collect spills and put it into
appropriated container.
Dispose of this material and its container at hazardous or special
waste collection point.

7. HANDLING AND STORAGE

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

Handling : When using do not eat, drink or smoke.
Wash hands thoroughly after handling or contact.
Avoid contact with skin and eyes.
Thoroughly clean equipment after use.
Emptied containers retain vapour and product residue.
Follow labeled warning even after container is emptied.

Storage : Keep in original containers.
Keep away from food, drink and animal feeding stuffs.
Store in dry, well-ventilated area.
Minimum storage temperature 10°F storage away from
Compatible materials for storage stainless steel, plastic, fiberglass, glass
Linning.
Incompatible material for storage galvanized steel, unlined mild steel.
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

Engineering measures : Ventilation required.

Industrial hygiene : Wash hands thoroughly after handling. When using do not eat,
drink or smoke. Wash clothing before re-using.

Personal protection

- **Respiratory protection** : No special respiratory protection equipment is recommended under normal conditions of use with adequate ventilation.
- **Skin protection** : Wear suitable protective clothing Wear safety boots.
- **Hand protection** : Wear suitable gloves.
- **Eye protection** : Chemical goggles or safety glasses.

Occupational Exposure Limits

TLV : Glyphosate: No data available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : Liquid
Colour : Light - amber - Light brown
Odour : Faint odour
pH value : 4.4 - 4.9 (1% w/v)
Boiling point [°C] : 100 (water)

Density [g/ml]	: 1.172 ± 0.02 @ 20°C
Vapour pressure [mPa]	: 0.0024@ 45°C (Glyphosate)
Solubility in water	: Miscible
Flash point [°C]	: >100
Log P octanol / water	: -3.2 (Glyphosate)
Flammability	: Not flammable
Explosion properties	: Not explosive
Oxidation properties	: Not oxidizing

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions.
Hazardous decomposition products	: Chloride compounds , nitrogen oxides (NO, NO2...) , carbon oxides (CO, CO2) .
Materials to avoid	: oxidizing agents , acids , alkali .
Oxidizing properties	: No data
Material to avoid/ Reactivity	: 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

N-(phosphonomethyl)glycine / glyphosate

Mutagenicity

In vitro and in vivo mutagenicity test(s)	: Not mutagenic
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Repeated dose toxicity

Rabbit, dermal 21 days : NOAEL toxicity > 5,000 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

Mause, 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 tomour > 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 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

12. ECOLOGICAL INFORMATION

On product : Glyphosate 480 SL

96 H-LC50 - Rainbow trout [mg/l] : 15

96 Hour - LC50- fish [mg/l] : Brachydanio rerio=17.7

48 H-EC50 - Daphnia magna [mg/l] : 28.9

72 H-EC50 Algae [mg/l] : 485 (Glyphosate)

LD50 Birds [mg/kg] : Japanese quail >2,000

Birds LC50 [ppm] : (8 day-feeding): (Glyphosate): Bobwhite quail
> 4,640

Bees LD50 [µg/Bee] : >100

Persistence and degradability : Glyphosate: Soil :

Moderately persistent in soil

Half-life time (t1/2) 15-60 days.

Degradation is primarily via: Microorganisms

Glyphosate: Water :

: Half-life time (t1/2) (water/sediment): 7-14 days

Mobility

: Glyphosate: Soil :

: Low mobility .

Adsorb strongly to soil.

Low risk of underground water contamination.

K_{oc} =884-60,000 L/kg

Bioaccumulative potential : Low bioaccumulation potential (Log Pow <-3.2).

13. DISPOSAL CONSIDERATIONS

Disposal : Dispose of in a pesticide approved landfill, or in a chemical incinerator equipped with scrubbers. Dispose in a safe manner in accordance with local/national regulations.
Keep out of drains, sewers, ditches and water ways. Recycle if appropriate facility / equipment available. Burn in proper incinerator.

14. TRANSPORT INFORMATION

UN NUMBER 3082

ADR/RID :

Shipping name : Environmentally hazardous substance,
liquid, n.o.s. (Glyphosate 480 g/l).

Substance ID no : 3082

Hazard ID no : 90

Label : 9

Item no : 11 0(c)

IMDG/IMO:

Packaging group : III

Label of class : 9

Shipping name : Environmentally hazardous substance,
liquid, n.o.s. (Glyphosate 480 g/l).

ICAO/IATA:

Proper Shipping name : Environmentally hazardous
substance, liquid, n.o.s (Glyphosate 480 g/l).

Class : 9

Hazard Label : Miscellaneous.
Packaging group: III
Passenger Aircraft: Y914 (max 30 kg)
914 (No Limit)
Cargo Aircraft : 914 (No Limit)

15. REGULATORY INFORMATION

Symbol : N

Indication of danger: Dangerous to the environment.

Risk phrases : **R 51/53** Toxic to aquatic organisms, may cause longterm adverse effects in the aquatic environment.

Safety phrases : **S 2** Keep out of reach children.

S 13 Keep away from food, drink and animal feedingstuffs.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 39 Wear eye/face protection.

S 61 Avoid release to the environment.

16. OTHER INFORMATION

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct.