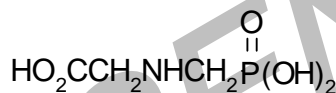


Material Safety Data Sheet

Product Name: Glyphosate

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Glyphosate
Formulation: 450g/LAS
CAS: 1071-83-6
Chemical Name: N-(phosphonomethyl)glycin
Molecular Weight: 169.1
Chemical Formulation: C₃H₈NO₅P
Chemical Structure:



Uses: Control of annual and perennial grasses and broad-leaved weeds, pre-harvest, post-planting/pre-emergence and in stubble, in cereals, peas, beans, oilseed rape, flax and mustard

Manufacturer: Nanjing Essence Fine-Chemical Co., Ltd
Address: 5th Floor, Suoye Road 18#, Nanjing, China
Telephone Number: +86 25 86465997
 +86 25 86466001
Fax Number: +86 25 86455985
Website: www.essencechem.com

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average by Weight</u>
Glyphosate	1071-83-6	45%

SECTION 3. HAZARDS IDENTIFICATION

Eye Contact: This product is a severe eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms such as swelling of eyelids and blurred vision may also become evident. If exposure is

brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment is likely to cause permanent damage.

Skin Contact:

Available data indicates that this product is not harmful. However product may be mildly irritating, although unlikely to cause anything more than mild transient discomfort.

Inhalation:

Available data indicates that this product is not harmful. It should present no hazards in normal use. However product may be irritating, but is unlikely to cause anything more than mild transient discomfort.

Ingestion:

Significant oral exposure is considered to be unlikely. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.

SECTION 4. FIRST AID MEASURES

Skin Contact:

Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 5 minutes or until chemical is removed.

Eye Contact:

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

Inhalation:

No first aid measures normally required. However, if inhalation has occurred, and irritation has developed, remove to fresh air and observe until recovered. If irritation becomes painful or persists more than about 30 minutes, seek medical advice.

Ingestion:

If product is swallowed or gets in mouth, wash mouth with water and give some water to drink. If symptoms develop, or if in doubt contact a Poisons Information Centre or a doctor.

SECTION 5. FIRE FIGHTING MEASURES

Fire And Explosion Hazards

There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. This product is likely to decompose only after heating to dryness, followed by

further strong heating. Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media:

Use extinguishing media suited to burning materials.

Fire Fighting:

If a significant quantity of this product is involved in a fire, call the fire brigade.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Protection:

In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus.

Clean-up Procedure:

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labeled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

SECTION 7. HANDLING AND STORAGE

Handling:

Keep exposure to this product to a minimum, and minimize the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order

to minimize risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage:

This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this schedule of poison. Protect this product from light. Store in the closed original container in a dry, cool, well ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:

No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapors and mists are minimize

Personal Protection:

Protective glasses or goggles must be worn when this product is being used. Failure to protect your eyes may lead to severe harm to them or to general health. Emergency eye wash facilities must also be available in an area close to where this product is being used.

You should avoid contact even with mild skin irritants. Therefore you should wear suitable impervious elbow-length gloves and facial protection when handling this product. See below for material types.

We suggest that protective clothing be made from the following: rubber, PVC.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Viscous, amber-colored liquid
Odor:	Slight amine odor
A. I. Content:	450g/l
Boiling Point:	Approximately 100°C at 100kPa
Freezing/Melting Point:	Approximately 0°C
Volatiles:	Water component
Vapour Pressure:	2.37 kPa at 20°C (water vapor pressure)

Water Solubility:	Completely soluble in water
PH:	No data

SECTION 10. STABILITY AND REACTIVITY

Stability:	This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.
Reactivity:	This product is likely to decompose only after heating to dryness, followed by further strong heating. Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death. Hydrogen cyanide poisoning signs and symptoms are weakness, dizziness, headache, nausea, vomiting, coma, convulsions, and death. Death results from respiratory arrest. Hydrogen cyanide gas acts very rapidly; symptoms and death can both occur quickly.

SECTION 11. TOXICOLOGICAL INFORMATION

Oral:	LD50(mice, rabbits, and goats)>10,000 mg/kg
Skin:	LD50 > 5000 mg/kg
Inhalation:	4-hr(rat) LC50 values 5 to 12 mg/L
Reproductive Effects:	Laboratory studies show that glyphosate produces reproductive changes in test animals very rarely and then only at very high doses (over 150 mg/kg/day). It is unlikely that the compound would produce reproductive effects in humans.
Teratogenic Effects:	In a teratology study with rabbits, no developmental toxicity was observed in the foetuses at the highest dose tested (350 mg/kg/day). Glyphosate does not appear to be teratogenic.
Mutagenic Effects:	Glyphosate mutagenicity and genotoxicity assays have been negative. It appears that glyphosate is not mutagenic.
Carcinogenic Effects:	Rats given oral doses of up to 400 mg/kg/day did not show any signs of cancer, nor did dogs given oral doses of up to 500 mg/kg/day or mice fed glyphosate at doses of up to 4500

mg/kg/day. It appears that glyphosate is not carcinogenic. Some microscopic liver and kidney changes, but no observable differences in function or toxic effects, have been seen after lifetime administration of glyphosate to test animals.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity:

The reported 96-hour LC50 values for other aquatic species >10 mg/L in Atlantic oysters, 934 mg/L in fiddler crab, and 281 mg/L in shrimp. The 48-hour LC50 for glyphosate in Daphnia (water flea), an important food source for freshwater fish, is 780 mg/L. There is a very low potential for the compound to build up in the tissues of aquatic invertebrates or other aquatic organisms.

Terrestrial Toxicity:

The dietary LC50 in both mallards and bobwhite quail is greater than 4500 ppm. Glyphosate is nontoxic to honeybees. Its oral and dermal LD50 is greater than 0.1 mg/bee. The reported contact LC50 values for earthworms in soil are greater than 5000 ppm for both the glyphosate trimethylsulfonium salt and formulated product.

Environmental Fate:

Glyphosate is moderately persistent in soil, with an estimated average half-life of 47 days. Reported field half-lives range from 1 to 174 days. It is strongly adsorbed to most soils, even those with lower organic and clay content.

In water, glyphosate is strongly adsorbed to suspended organic and mineral matter and is broken down primarily by microorganisms. Its half-life in pond water ranges from 12 days to 10 weeks.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Suggestion:

There are many pieces of legislation covering waste disposal and they differ in each state and territory, so each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. The Hierarchy of Controls seems to be common - the user should investigate: Reduce, Reuse, and Recycle and only if all else fails should disposal be considered.

Note that properties of a product may change in use, so that the following suggestions may not always be appropriate. The following may help you in properly addressing this matter for this product. Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers.

SECTION 14. TRANSPORT INFORMATION

This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

SECTION 15. REGULATORY INFORMATION

All of the significant ingredients in this formulation are compliant with NICNAS regulations. The following ingredient: Glyphosate is mentioned in the SUSDP.

SECTION 16. OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Nanjing Essence assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of the material.