

SAFETY DATA SHEETS

According to the UN GHS revision 10

1: Identification

1.1 GHS Product identifier

Product name Glyphosate

1.2 Other means of identification

Product number 1071-83-6

Other names Glyphosate

1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

1.4 Supplier's details

Company Zhongshan Greenrock Technology Co., Ltd.

Address No. 138, Jinsan Avenue, Sanjiao Town, Zhongshan City, Guangdong Province, China

Telephone +86-2087066781

1.5 Emergency phone number

Emergency phone number +86-2087066781

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

2: Hazard identification

2.1 Emergency Overview

It is highly corrosive and can cause irreversible damage to the skin and eyes. If in contact, rinse immediately with plenty of water and seek medical help as soon as possible.

2.2 GHS Classification

Serious eye damage/eye irritation : Category 1

Hazardous to the aquatic environment, long-term hazard : Category 2

2.3 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H318 Causes serious eye damage

H411 Toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P264+P265 Wash hands [and ...] thoroughly after handling. Do not touch eyes.

Response

P317 Get emergency medical help.

P391 Collect spillage.

P305+P354+P338 IF IN EYES, Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Storage

no data available

Disposal

P501 Dispose of contents/container to ...

2.4 Physical and chemical

Acidic or alkaline substances that react with metals to produce flammable hydrogen. May cause violent exothermic reactions when in contact with other substances. At high concentrations, they have strong oxidizing or reducing properties.

2.5 Health hazards

Skin contact: May cause severe burns, tissue necrosis, and scarring. Eye contact: May cause corneal damage, vision loss, or even blindness. Inhalation of vapor or mist may cause respiratory burns and pulmonary edema.

2.6 Environmental hazards

Leakage into the environment can change the pH value of soil and water, causing serious ecological damage. It is highly toxic to aquatic organisms and can cause the death of aquatic organisms and the collapse of the ecosystem.

2.7 Other hazards which do not result in classification

no data available

3: Composition/information on ingredients

3.1 Substances

| Chemical name | Common names and synonyms | CAS number | EC number | Concentration |
|---------------|---------------------------|------------|-----------|---------------|
| Glyphosate | Glyphosate | 1071-83-6 | 213-997-4 | 99% |

4: First-aid measures

4.1 General advice

Stop contact immediately and remove contaminated clothing; rinse the exposed area with plenty of running water and seek medical attention immediately with the material's SDS. If the corrosive substance is acidic (such as sulfuric acid), neutralize it with a weak alkaline solution (such as 5% sodium bicarbonate) after rinsing. For alkaline corrosive substances (such as sodium hydroxide), neutralize them with a weak acidic solution (such as 1% acetic acid).

4.2 If inhaled

Move to fresh air and keep the airway open. If corrosive vapors (such as hydrochloric acid mist) are inhaled, immediately administer nebulized inhalation (normal saline + dexamethasone). If laryngeal edema or breathing difficulties occur, immediately perform a tracheotomy (requires professional operation) and seek medical attention.

4.3 In case of skin contact

Rinse with plenty of running water for 20-30 minutes (make sure to rinse thoroughly, especially between the fingers, in the armpits, and other folds). If blisters are present, do not prick them; instead, apply a sterile gauze compress (to avoid adhesion). Do not apply oily ointments to avoid affecting subsequent treatment.

4.4 In case of eye contact

Immediately flush with an eyewash or plenty of normal saline for 15-20 minutes (use a gentle flow to avoid direct exposure to the cornea); apply antibiotic eye ointment (such as erythromycin ointment) to the eyelids, wear a sterile eye patch, and seek immediate medical attention from an ophthalmologist.

4.5 If swallowed

Do not induce vomiting (to avoid secondary damage to the esophageal mucosa). If the substance is acidic, take milk or egg white orally (to protect the gastric mucosa). If the substance is alkaline, take diluted vinegar (1:10 ratio) orally. If you carry SDS, seek medical attention immediately for a gastroscopy.

4.6 Most important symptoms and effects, both acute and delayed

Acute symptoms: skin redness, swelling, blisters, ulcers, severe eye pain, photophobia, blurred vision, oral/esophageal burns, and difficulty swallowing; long-term effects: skin scarring, corneal scarring (possibly causing blindness), and esophageal stenosis.

4.7 Protection of first-aiders

Rescuers must wear corrosion-resistant chemical protective clothing, chemical protective gloves (made of fluororubber), chemical goggles and masks; stand upwind when flushing to avoid inhaling volatile corrosive gases; after contact, equipment must be cleaned with a neutralizer and then rinsed with clean water.

4.8 Notes to physician

Inform the doctor of the type of corrosive agent (acid/base), concentration, and duration of contact. Skin burns should be treated according to their depth (superficial II degree and above require skin grafting). Eye injuries should be checked for corneal epithelial integrity and, if necessary, corneal repair drugs (such as recombinant human epidermal growth factor) should be used.

5: Fire-fighting measures

5.1 Unsuitable extinguishing media

Acidic corrosive substances (such as sulfuric acid): It is strictly forbidden to use water (it releases heat when in contact with water, causing splashing) or alkaline fire extinguishing agents (it neutralizes the heat and increases the risk); Alkaline corrosive substances (such as sodium hydroxide): It is strictly forbidden to use acidic fire extinguishing agents.

5.2 Specific hazards during fire fighting

Combustion is accompanied by splashing of corrosive liquids, causing severe burns to the skin/eyes; some corrosive substances (such as nitric acid) release toxic gases when burned and also corrode fire-fighting equipment; high-temperature molten substances (such as molten alkali) easily adhere to the skin and cause deep burns.

5.3 Hazardous combustion products

Acidic corrosive substances release hydrogen chloride and sulfur dioxide (such as sulfuric acid); alkaline corrosive substances release ammonia (such as ammonia water); chlorine-containing corrosive substances release chlorine gas.

5.4 Specific extinguishing methods

Small area: Use dry powder fire extinguishing agent to put out the fire. If it is solid corrosive material, cover it with dry sand (to isolate it from the air); Large area: Cool the surrounding containers first, then use dry powder to put out the fire. It is strictly forbidden to use water directly to prevent splashing; After extinguishing the fire, use a neutralizer (weak base for acid, weak acid for alkali) to deal with the leaked material.

5.5 Special protective equipment for fire-fighters

Wear fully enclosed corrosion-resistant chemical protective clothing, chemical protective gloves (fluororubber), chemical goggles + mask; carry a pH tester (to monitor the pH value of the leak); after the operation, the equipment needs to be cleaned with a neutralizer and then rinsed with clean water.

6: Accidental release measures

6.1 Protective measures for workers

Wear fully enclosed chemical protective clothing (acid and alkali resistant), chemical protective gloves (fluororubber), chemical goggles + face mask; wear a gas mask (acid/alkali filter box) when dealing with volatile corrosive substances.

6.2 Environmental protection measure

Prevent leaked material from contacting skin or eyes; do not discharge into water or soil; treat contaminated ground with a neutralizer (sodium carbonate for acid, dilute acetic acid for alkali) until neutral.

6.3 Containment methods for leaked chemicals

Collect liquids in sealed polyethylene containers; collect solids with corrosion-resistant tools and place them in chemical-resistant bags (marked "corrosive"); store them in isolation after collection.

6.4 Cleanup methods for chemical spills

Small leakage: absorb with acid/alkali resistant cotton and then neutralize; Large leakage: transfer to storage tank with corrosion resistant pump; After cleaning, flush the ground with plenty of water (if compatible), and collect the flushing water for neutralization.

6.5 Measures to prevent the spread of leaks

Designate an 8-meter isolation zone; use corrosion-resistant isolation belts for blocking; and enhance ventilation (corrosion-resistant fans) for volatile corrosive substances.

6.6 Container leakage treatment

Minor leaks: seal with acid/alkali resistant putty; severe leaks: evacuate, have professionals transfer remaining substances, and do not reuse damaged containers.

6.7 Special considerations

In case of skin contact, rinse with an eyewash for 15 minutes; in case of eye contact, rinse with an eyewash for 15 minutes and seek medical attention; add reagents slowly during neutralization (to prevent heat release); clean protective equipment with neutralizer and then rinse with clean water.

7: Handling and storage

7.1 Safe storage conditions

Store in a corrosion-resistant warehouse (the floor is epoxy resin coated, and the walls are acid/alkali-resistant tiles); the container is made of corrosion-resistant material (glass fiber reinforced plastic for acid corrosion, high-density polyethylene for alkaline corrosion), with a capacity of ?200L to prevent dumping; the warehouse is equipped with an emergency neutralization tank (volume ?5m³) and equipped with acid/alkali neutralizers (such as sodium carbonate, dilute acetic acid).

7.2 Storage precautions

Store them separately from materials that may come into contact with the skin (such as clothing and gloves) to avoid cross contamination. Use a corrosion-resistant forklift to transport containers and avoid impact. Check the humidity in the warehouse daily (?65%) to prevent moisture from exacerbating corrosion. In case of leakage, immediately absorb it with inert materials (such as sand) and then treat it with a neutralizer.

7.3 VCI Storage Grade

Level 2 (medium-high): Metal pipes and valves are coated with VCI anti-rust paint (acid/alkali resistant type) and maintained once every six months; VCI anti-rust blocks (such as urethane) are placed in the warehouse and replenished once every quarter to prevent corrosion of metal parts.

7.4 Recommended storage temperature

5-35?, avoid sudden temperature changes (such as moving directly from a low temperature environment to a high temperature environment); concentrated acids/bases must be kept at a temperature ?30? to prevent temperature increases from causing increased container pressure; in winter, they must be protected from

freezing (temperature $\geq 5^\circ$) to prevent the solution from freezing and cracking the container (if the label has a recommended storage temperature, follow the label).

7.5 Handling

For precautions see Safety Data Sheet section 2

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

8: Exposure controls/personal protection

8.1 Respiratory protection

When exposed to corrosive vapors (such as hydrochloric acid mist and sulfuric acid mist), wear a powered air-purifying respirator (APF ≥ 50); in high-concentration environments, a positive pressure air respirator is required to avoid inhalation burns to the respiratory tract.

8.2 Recommended Filter type

For acidic corrosive substances, choose Type E filter cartridge (protects against acidic gases such as SO_2 and HCl); for alkaline corrosive substances, choose Type K filter cartridge (protects against ammonia and amines); if the product contains dust, add Type P2 filter cotton.

8.3 Eye/face protection

Wear chemical protective goggles + full-face mask. The mask must cover the chin. The lens should be made of polycarbonate (corrosion-resistant and impact-resistant). Check the sealing regularly.

8.4 Skin and body protection

Wear corrosion-resistant chemical protective clothing made of fluororubber or polytetrafluoroethylene (PTFE) to avoid direct skin contact; wear an apron (of the same material) with protection covering the chest to the knees.

8.5 Hand protection

Wear corrosion-resistant gloves. For acid corrosion, choose neoprene material; for alkaline corrosion, choose nitrile rubber material. The thickness of the gloves should be ≥ 0.5 mm. Perform a water leakage test before use.

8.6 Hygiene measures

Immediately after the operation, rinse the skin with running water for 10 minutes. If there is stinging at the contact site, apply a neutralizer (5% sodium bicarbonate for acid and 1% acetic acid for alkali) for 5 minutes. Do not use irritating skin care products to avoid aggravating skin damage.

9: Physical and chemical properties and safety characteristics

| | |
|----------------|----------------|
| Physical state | white powder |
| Colour | White crystals |

| | |
|-----------------------------------------------------------------|------------------------------------------------------------------------|
| Odour | Odorless |
| Melting point/freezing point | 230oC |
| Boiling point or initial boiling point and boiling range | 465.8oC at 760 mmHg |
| Flammability | Combustible. Gives off irritating or toxic fumes (or gases) in a fire. |
| Lower and upper explosion limit/flammability limit | no data available |
| Flash point | 235.5oC |
| Auto-ignition temperature | no data available |
| Decomposition temperature | <234°C |
| pH | no data available |
| Kinematic viscosity | no data available |
| Solubility | In water:1.2 g/100 mL |
| Partition coefficient n-octanol/water | no data available |
| Vapour pressure | 1.94e-07 mm Hg at 45°C |
| Density and/or relative density | 1.74 |
| Relative vapour density | no data available |
| Particle characteristics | no data available |

10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Negligible volatility

10.3 Possibility of hazardous reactions

Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc. GLYPHOSATE may react with galvanized steel or unlined steel (except stainless steel) containers to produce hydrogen gas which may form a highly combustible or explosive gas mixture. It can react with caustic (basic) materials to liberate heat. It is corrosive to iron.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Strong oxidizing agents, metals, bases.

10.6 Hazardous decomposition products

When heated to decomposition it emits very toxic fumes of /nitrogen and phosphorus oxides/.

11: Toxicological information

11.1 Acute toxicity

Oral: LD50 Goat oral 3530 mg/kg

Inhalation: LC50 Rat inhalation >4.98 mg/L air/4 hr

Dermal: LD50 Rabbit percutaneous >5000 mg/kg

11.2 Skin corrosion/irritation

no data available

11.3 Serious eye damage/irritation

no data available

11.4 Respiratory or skin sensitization

no data available

11.5 Germ cell mutagenicity

no data available

11.6 Carcinogenicity

Classification - D; not classifiable as to human carcinogenicity. Basis - Inadequate evidence for oncogenicity in animals. Glyphosate was originally classified as C, possible human carcinogen, on the basis of increased incidence of renal tumors in mice. Following independent review of the slides the classification was changed to D on the basis of a lack of statistical significance and uncertainty as to a treatment-related effect.

11.7 Reproductive toxicity

no data available

11.8 STOT-single exposure

no data available

11.9 STOT-repeated exposure

no data available

11.10 Aspiration hazard

no data available

12: Ecological information

12.1 Toxicity

Toxicity to fish: LC50; Species: /Oncorhynchus mykiss/ (Rainbow trout) weight 0.8 g; Conditions: static bioassay without aeration, 12°C, pH 7.2-7.5, water hardness 40-50 mg/L as calcium carbonate and alkalinity of 30-35 mg/L Concentration: 130 mg/L for 96 hr (95% confidence interval: 108-156 mg/L) /Technical material, 96.7%

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water Flea) age <24 hr; Conditions: freshwater, static; Concentration: >22000 ug/L for 48 hr; Effect: intoxication, immobilization /80% purity

Toxicity to algae: EC50; Species: Microcystis aeruginosa (Blue-Green Algae) Exponential Growth Phase; Conditions: freshwater, static, 22°C; Concentration: 251400 ug/L for 21 days; Effect: decreased population growth rate /formulation

Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: When glyphosate was incubated in Williams silt loam soil (pH 6.4, 1.9% organic matter), 19% degradation occurred in 9 days. No degradation was noted in sterilized soil(1). In shake-flask metabolism studies, glyphosate was rapidly and completely biodegraded in the presence of soil microorganisms under both aerobic and anaerobic conditions(2). After 28 days under aerobic conditions, 45-55% of the glyphosate was mineralized using Ray silt loam soil, Lintonia sandy loam soil, and Drummer silty clay loam soil. Norfolk sandy loam mineralized glyphosate at a much slower, but still significant, rate. In greenhouse experiments, the half-lives of glyphosate in Ray, Drummer and Norfolk soil was 3, 27, and 130 days, respectively(2). The biodegradation half-life of glyphosate in a Kickapoo sandy loam and Dupo silt loam soil were 1.85 and 2.06 days, respectively, under aerobic conditions. The major degradation product observed was aminomethyl phosphonic acid. The aerobic and anaerobic biodegradation half-life of glyphosate in a flooded silty clay loam sediment was 7 and 8.1 days, respectively(3).

12.3 Bioaccumulative potential

In controlled laboratory studies using glyphosate at levels 3 to 4 times the recommended application rates, BCF values in fish tissue 10-14 days post application ranged from 0.2 to 0.3(1). A BCF value of 0.52 (whole body) was measured in bluegill (*Lepomis macrochirus*) exposed for 28 days(2). BCF values of 0.38 for edible tissues and 0.63 for non-edible tissues have been reported(3). According to a classification scheme(4), these BCF data suggest that bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

When applied to clay loam or muck soil at an application rate of 56 kg/ha, glyphosate was rapidly inactivated. This inactivation was probably the result of reversible adsorption to clay and organic matter. Iron and aluminum clays and organic matter adsorbed more glyphosate than sodium and calcium clays and was readily bound to kaolinite, illite, bentonite, charcoal and muck but not to ethyl cellulose. (14)¹⁴C-Labeled glyphosate was degraded in soil and (14)¹⁴C¹⁴CO₂ was released.

12.5 Other adverse effects

no data available

13: Disposal considerations

13.1 Disposal methods for waste chemicals

Acidic corrosives can be treated with alkaline neutralizers (such as sodium carbonate) until neutralized and then disposed of as ordinary waste. Alkaline corrosives can be treated with acidic neutralizers (such as dilute hydrochloric acid) until neutralized and then disposed of. Those that cannot be neutralized must be incinerated at high temperature or chemically decomposed by a professional unit. The container must be thoroughly cleaned before being disposed of.

13.2 Precautions

Neutralization reactions must be conducted in well-ventilated, dedicated facilities, with the reaction rate controlled to prevent splashing. Disposal personnel must wear corrosion-resistant protective gear. The pH value of the neutralized waste must be controlled between 6 and 9. Direct disposal of unneutralized corrosive materials is prohibited. Emergency pools must be established at the disposal site to prevent leakage and contamination.

14: Transport information

14.1 UN Number

ADR/RID: UN3077

IMDG: UN3077

IATA: UN3077

14.2 UN Proper Shipping Name

ADR/RID:
ENVIRONMENTALLY
HAZARDOUS SUBSTANCE,
SOLID, N.O.S.

IMDG: ENVIRONMENTALLY
HAZARDOUS SUBSTANCE,
SOLID, N.O.S.

IATA: ENVIRONMENTALLY
HAZARDOUS SUBSTANCE,
SOLID, N.O.S.

14.3 Transport hazard class(es)

ADR/RID: 9

IMDG: 9

IATA: 9

14.4 Packing group, if applicable

ADR/RID: III

IMDG: III

IATA: III

14.5 Environmental hazards

ADR/RID: yes

IMDG: yes

IATA: yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

| Chemical name | Common names and synonyms | CAS number | EC number |
|--------------------------------------------------------------------|---------------------------|------------|-------------|
| Glyphosate | Glyphosate | 1071-83-6 | 213-997-4 |
| New Zealand Inventory of Chemicals (NZIoC) | | | Listed. |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS) | | | Listed. |
| Vietnam National Chemical Inventory | | | Listed. |
| Australian Inventory of Industrial Chemicals (AIIC) | | | Not Listed. |
| Catalogue of Strictly Restricted Toxic Chemicals in China | | | Not Listed. |
| China Catalog of Hazardous chemicals 2015 | | | Not Listed. |
| European INventory of Existing Commercial chemical Substances | | | Not Listed. |
| IARC Monographs on the Evaluation of Carcinogenic Risks to Humans | | | Listed. |
| TSCA Inventory of Chemical Substances | | | Not Listed. |

16: Other information

Information on revision

| | |
|-------------------|--------------|
| SDS Creation Date | July 1, 2025 |
| SDS Revision Date | July 1, 2025 |

Abbreviations and acronyms in SDS

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

SDS References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Any questions regarding this Safety Data Sheet, Please send your inquiry to sales@MolBest.com

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