MATERIAL SAFETY DATA SHEET

SANONDA
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SICKLE™ 540 HERBICIDE

1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

Product Name: **Sickle 540 Herbicide**
Product Use: Water soluble herbicide for non-selective control of many annual and perennial weeds.
Supplier: **Sanonda (Australia) Pty Ltd**
ACN: 059 813 973
Address: Suite 822, St Kilda Rd Towers, No.1 Queens Rd, Melbourne VIC 3004
Telephone: 03 9863 8081
Facsimile: 03 9863 8083
Emergency phone number: 03 9863 8081

2. HAZARD IDENTIFICATION

Statement of Hazardous Nature
This product is classified as: Not classified as hazardous according to the criteria of ASCC. Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.
Risk Phrases:
Not Hazardous - No criteria found.
Safety Phrases:
S23, S36, S24/25. Do not breathe spray mists. Wear suitable protective clothing. Avoid contact with skin and eyes.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Entity	CAS No	Concentration (g/L)	TWA (mg/m^3)	STEL (mg/m^3)
Glyphosate acid	1071-83-6	540 g/L	Not set	Not set
IPA (isopropylamine)	75-31-0	189 g/L	12	24
Other non-hazardous ingredients	secret	to 100	Not set	Not set

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.

4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (phone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to a doctor.

FIRST AID

Inhalation:

First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact:

Irritation is unlikely. However, if irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed.

Eye Contact:

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed, while holding the eyelid(s) open. Obtain medical advice immediately if irritation occurs. Take special care if exposed person is wearing contact lenses.

Ingestion:

If product is swallowed or gets in mouth, do NOT induce vomiting; 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.

SYMPTOM

Local: This product will irritate the eyes and skin.

Systemic: In minor ingestions of glyphosate formulations, irritation of mucous membranes, hypersalivation, nausea, vomiting and diarrhoea may occur. Ingestion of higher doses may cause corrosive effects on the upper gastrointestinal tract. Renal (kidney) and hepatic (liver) impairment and acidosis (abnormal increase in acidity of body fluids) may follow. Seizures, acute respiratory distress (ARDS) and cardiogenic shock are possible.

ADVICE TO DOCTOR

Treatment should be symptomatic and supportive after decontamination. Intravenous fluid replacement is important and hemodialysis may be considered.

Gastric lavage can be considered in severe ingestions, charcoal and cathartic applications are recommended. Monitor respiratory, cardiac, liver and kidney function. Monitor acidity of blood fluids. There is no antidote.

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 are likely to be irritating if inhaled. In a fire, formation of oxides of carbon, nitrogen and phosphorous can be expected.

EXTINGUISHING MEDIA

Not Combustible. 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.

FIRE INCOMPATIBILITY

None.

HAZCHEM

2X

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal

Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite). Collect in sealed open top containers for disposal. Final clean up with degreasing agent or detergent is advised.

Environmental Precautions

Prevent from entering drains, waterways or sewers.

7. HANDLING AND STORAGE

HANDLING

Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that these measures are followed.

No special storage and transport requirements. This product has no UN classification.

STORAGE

This product is a S5 Poison. Store in the closed, original container in a dry, well ventilated area out of direct sunlight. Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

NATIONAL OCCUPATIONAL EXPOSURE LIMITS

Exposure limits have not been established by NOHSC Australia for any of the significant ingredients in this product.

The ADI (Acceptable Daily Intake) for Glyphosate is set at 0.3mg/kg/day. The corresponding NOEL (No-observable-effect-level) is set at 30mg/kg/day.

ENGINEERING CONTROLS

Use good occupational work practice with adequate ventilation. Natural ventilation should be adequate under normal use conditions.

PERSONAL PROTECTION

Respiratory Protection:

It is usually safe to not use a dust mask or respirator protection on account of this product. However, if the product is being used in dusty or confined conditions, use of a mask or respirator may be preferred.

Protective Gloves:

Impermeable elbow length PVC gloves should be worn when you are using this product, to prevent irritation.

Eye Protection:

When preparing product for use, wear face shield or goggles.

Clothing:

When using controlled droplet applicator, wear protective waterproof clothing and impervious footwear.

After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield and goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colourless to slight amber liquid
Odour:	Not available
pH:	4.9 – 5.1 (neat), 4.3 – 4.7 (7% w/w solution)
Vapour pressure: Glyphosate isopropylamine salt	2.1 x 10^{-3} mPa (25 ^{o}C)
Vapour density:	Not available
Boiling point:	Not available
Freezing/melting point:	Not available
Solubility in water:	Completely soluble
Specific Gravity:	1.240 at 20 ^{o}C
Flash Point:	Not relevant
Flammability (explosive) limits:	Not relevant
Auto-ignition temperature:	Not available
Partition coefficient (octanol/water):	
Glyphosate isopropylamine salt :	Log P_{OW} = -5.4
Glyphosate:	Log P_{OW} = <-3.2 at 20 ^{o}C (pH 2-5)

10. STABILITY AND REACTIVITY

REACTIVITY

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.

CONDITIONS TO AVOID

This product should be kept in a cool place, preferably below 30 °C.

Incompatibilities:

Strong oxidising agents.

Fire Decomposition:

If involved in a strong fire can release nitrogen oxides and oxides of phosphorus.

Polymerisation:

This product will not undergo polymerisation reactions.

Materials to Avoid:

Corrosive to mild steel, galvanised and zinc. Non-corrosive to stainless steel, polyethylene and plastics.

Do not mix, store or apply the product or spray solutions of the product in galvanised steel or unlined steel (except stainless steel) containers or spray tanks.

HAZARDOUS REACTION

Avoid contact of the concentrate with strong alkalis and alkaline materials such as lime. Such contact may release isopropylamine vapour with a strong fish like odour, which is an irritant to eyes. Isopropylamine is moderately toxic, LD50 (oral, rat) is 820 mg/kg and a TLV of 5 ppm (TWA) has been set.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Oral toxicity	LD_{50} rat: > 5000 mg/kg (Glyphosate isopropylamine salt)
Dermal toxicity	LD_{50} rabbit: > 5000 mg/kg (Glyphosate isopropylamine salt)
Inhalation toxicity	LC_{50} (4 h) rat: > 1.3 mg/L (Glyphosate isopropylamine salt)
Skin irritation	Skin irritation - Ammonium Quaternary Compound No skin irritation (rabbit) (Glyphosate isopropylamine salt)
Eye irritation	Eye irritation - Ammonium Quaternary Compound Slight eye irritation (rabbit) (Glyphosate isopropylamine salt)
Sensitisation	Not sensitising (guinea pigs) (Glyphosate)

EFFECTS OF ACUTE EXPOSURE

Inhalation:

When applying the product as a spray avoid breathing in spray mists. May cause irritation to mucous membranes and respiratory tract.

Ingestion:

The concentrate is of low toxicity if swallowed. Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury. Possible symptoms of exposure include: nausea, vomiting and gastrointerestinal discomfort and diarrhoea. Ingestion of a large quantity of the undiluted product may result in hypotension and pulmonary oedema.

Skin:

The concentrated product may cause slight irritation on contact. Prolonged contact is likely to result in irritation.

EFFECT OF LONG TERM EXPOSURE

Reproductive Effects:

Most of the field and laboratory evidence shows that glyphosate produces no reproductive changes in test animals. It is unlikely that the compound would produce any reproductive effects in humans.

Teratogenic Effects:

In a teratology study with rabbits, the maternal NOEL was 175 mg/kg/day and no developmental toxicity was observed in the fetuses at the highest dose tested (350 mg/kg/day).

Rats given doses up to 3,500 mg/kg on days 6 to 19 of pregnancy had offspring with no teratogenic effects, but other toxic effects were observed in both the mothers and the fetuses. No toxic effects to the fetuses occurred at 1,000 mg/kg/day.

Mutagenic Effects:

The compound does not cause mutations in microbes. The tests on eight different kinds of bacterial strains and on yeast cells were all negative. The compound poses little mutagenic risk to humans.

Carcinogenic Effects:

Rats and dogs and mice fed glyphosate over a wide range of doses showed no cancer related effects directly due to the compound. EPA has stated that there is sufficient evidence to conclude that glyphosate is not carcinogenic in humans.

Organ Toxicity:

Glyphosate caused no changes in the rate of body weight gain, in blood, nor in kidneys or liver. The studies were conducted at doses up to 500 mg/kg.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA

For Glyphosate isopropylamine salt:

Fish toxicity: LC_{50} (96 h) trout > 1000 mg/L
LC_{50} (96 h) bluegill sunfish > 1000 mg/L
LC_{50} (96 h) flathead minnows 97 mg/L
LC_{50} (96 h) channel catfish 130 mg/L

Aquatic invertebrate toxicity:
EC_{50} (48 h) water flea (Daphnia magma) 930 mg/L

Algal toxicity: EC_{50} (72 h) green algae (Scenedesmus subspicatus) 72.9 mg/L

For Glyphosate:

Aquatic plant toxicity: EC_{50} (7 d) duck weed (Lemna gibba) is 25.5 mg/L

Bird toxicity: LD_{50} bobwhite quail is >3851 mg/kg

ENVIRONMENTAL FATE

Breakdown in soil and groundwater:

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.

Breakdown in water:

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.

Breakdown in vegetation:

Glyphosate may be translocated throughout the plant, including to the roots. It is extensively metabolized by some plants, while remaining intact in others.

OTHER PRECAUTIONS

Do not spray in high winds. Do not contaminate dams, waterways or sewers with this product.

13. DISPOSAL CONSIDERATIONS

DO NOT re-use container. Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. **DO NOT** dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, vegetation and roots. Empty containers and product should not be burnt. **DO NOT** allow product to enter waterways.

14. TRANSPORT INFORMATION

ADG Code	Considered non dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail. No special transport conditions are necessary unless required by other regulations. It is good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilisers during transport.
Hazchem Code	2X (Australia)
U.N. Number	3082
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (GLPHOSATE 540G/L)
IMO Class	9
Packing Group	III

15. REGULATORY INFORMATION

Poisons Schedule:	S5
Packaging & Labelling:	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
AICS (Australia):	All of the components in this product are listed on the Australian Inventory of Chemical Substances.

16. OTHER INFORMATION

This MSDS contains only safety-related information. For other data see product literature.

All due care and skill, so far as practicable, has been applied in the preparation and collation of the information in this MSDS. Each user of the Product named in this MSDS should read and consider the information contained in this MSDS in the context of how the Product will be stored, handled, used or applied in the workplace. In all circumstances, it is the responsibility of the user of the Product to ensure that they have sought out the relevant safety data appropriate to their particular situation. Nothing contained in this MSDS shall be construed as a representation or recommendation to the user about the suitability or otherwise of the Product named in this MSDS for the user's particular situation. If the user requires any clarification or further information, the user should contact Sanonda (Australia) Pty Ltd.

CONTACT POINT:
Sanonda (Australia) Pty Ltd
Suite 822, St Kilda Road Towers,
No.1 Queens Road, Melbourne, VIC 3004
Telephone: 03 9863 8081
Facsimile: 03 9863 8083

National Poisons Information Centre: Dial 13 11 26 (from anywhere in Australia).

Please read all labels and booklets carefully before using product.