

MATERIAL SAFETY DATA SHEET

Introductory Details

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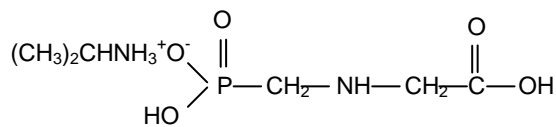
Date of preparation : 15 April 2004

Date revised : 13 June 2008

SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Details

Product Name : Glyphosate isopropylamine salt 41%
Trade Name : TRICROWN 41% / KARSMEX 41% / LIDERCA 41%
Chemical Name : Isopropylamine salt of N-(phosphonomethyl) glycine
Chemical Formula : $C_6H_{17}N_2PO_5$
Molar Mass : 228.15
Chemical Family : -
Manufacturer's Code : -
Use : Herbicide
Structural Formula :



Glyphosate Isopropylamine

1.2 Company Identification

Manufacturer

Name and Address : Agricultural Chemicals (M) Sdn. Bhd.
962, Lorong Perusahaan 8, Taman Perindustrian Perai,
13600 Perai, Pulau Pinang, Malaysia.
Telephone Number : 604-390 7988
Emergency Telephone Number : 604-390 7988

1.3 Contact Point

Designation : Ms. Cheong Wai Ching, Product Support Manager /
En. Ahmad Labib bin Yusof, Administrative Assistant
Tel. No. : 604-390 7988

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SECTION 2 : COMPOSITION/INFORMATION ON INGREDIENT

Chemical Name	CAS No.	Proportion	Exposure Limit	Toxicity Data
Isopropylamine salt of N-(phosphonomethyl) glycine	1071-83-6	41 %	Refer to Section 9	Refer to Section 11
Surfactant	-	< 15 %		
Water	-	Balance		

SECTION 3 : PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Colourless to slight yellowish liquid
Odour	: Characteristic odour
Solubility	: Miscible with water
Boiling Point	: No data available
Melting Point (technical)	: 200°C
Vapour Pressure (technical)	: 1.94×10^{-7} mmHg at 45°C
Percentage Volatiles	: No data available
Evaporation Rate	: No data available
Vapour Density	: No data available
Specific Gravity	: No data available
Flash Point	: Not applicable
Autoignition Temperature	: No data available
Flammable Limit	: No data available
Density	: 1.15 g/ml
pH Value (without dilution)	: 4.4 (typical value)

SECTION 4 : HAZARD IDENTIFICATION

Irritating to eyes and skin
Avoid breathing in spray mists.

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SECTION 5 : FIRST AID MEASURES

- Ingestion : Drink plenty of water or milk. Induce vomiting only if ingested in large amount. Get prompt medical attention.
- Eye contact : Immediately flush with plenty of water for at least 15 minutes. Get medical attention.
- Skin contact : Remove contaminated clothing and wash skin thoroughly with soap and water.
- Inhalation : Remove patient to fresh air.
- Notes to physician : Treatment is symptomatic.

SECTION 6 : FIRE FIGHTING MEASURES

- Extinguishing Media : CO₂, foam, dry chemical or water spray.
Use water spray to cool containers or personnel threatened by fire.
- Fire fighting instruction : Fire fighters should wear full-faced self contained breathing apparatus and protective clothing.
- Special hazards : No unusual fire and explosion hazards.

SECTION 7 : ACCIDENTAL RELEASE MEASURE

Leak and/or Spill :

Wear protective clothing. Eliminate ignition source. Ventilate area. Absorb spills with inert material such as clay, sand, earth, sawdust etc. and collect in a drum. Cover up the contaminated area with household detergent and small amount of water. Brush the slurry and spread inert absorbents on the slurry liquid and collect the absorbed material in a drum. Seal drum and dispose of. Do not contaminate water resources.

SECTION 8 : HANDLING AND STORAGE

- Handling : Read the label before use. Wear pesticide respiratory masks protective gloves, goggles and clothing while handling.
- Storage : Keep in original container, tightly closed, in a cool dry and well-ventilated place, out of reach of children. Keep away from foodstuffs and animal feeds.

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SECTION 9 : EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limit (Technical) :
ACGIH TLV / 8 hr TWA : Total 10 mg/m³; Respirable 5 mg/m³
(For nuisance dust)
* These limits are stated only to indicate the least stringent airborne dust exposure levels applicable to nuisance dusts. History of use is not sufficient to designate this material a nuisance dust.

Engineering measures : Local exhaust ventilation

Personal protection : Wear pesticide respiratory masks protective gloves, goggles and clothing while handling.

SECTION 10 : STABILITY AND REACTIVITY

Conditions to avoid : Direct sunlight, heat and extreme temperature.
The product or spray solution of this product react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly combustible gas mixture. Avoid contact of the concentrate with strong alkaline. Such contact may release isopropylamine vapour with a strong odour, irritant to eyes. If involved in fire, can release nitrogen oxides and oxides of phosphorous.

Incompatible : Strong alkaline corrosive to mild steel, galvanized steel and zinc.

Decomposition Products : No hazardous decomposition product.

Hazardous polymerization : Will not occur.

Stability : Stable under normal conditions.

SECTION 11 : TOXICOLOGICAL INFORMATION

The following data is based on Glyphosate Acid Technical

Acute Toxicity :
Oral LD50 : (Rat) > 5,000mg/kg
Dermal LD50 : (Rabbit) > 5,000mg/kg

Mutagenic Effect : No evidence on mutagenic effect

Teratogenic Effect : Not teratogenic

Carcinogenicity : Not carcinogen

Reproductive Effect : No evidence on reproductive effect..

Effects of Overexposure : Lifetime ingestion studies in animals have shown that repeated doses produces no significant effects.

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Irritant Properties :
Eye Irritation : (Rabbit) Severely irritating
Skin Irritation (4 hr) : (Rabbit) Not irritating
Route of Exposure : Dermal contact and inhalation
Chronic Effects : No data available
Sensitising Effect : It is not a skin sensitizer in animal tests
Target Organs : No data available
Medical Conditions Generally Aggravated by Exposure : None known

Following repeated exposure (90 days) to Glyphosate in their feed, decreased weight gain were noted in mice, while no treatment-related effects occurred in rats.

Following repeated exposure (3 weeks) to Glyphosate, slight skin irritation was the primary effect observed in rabbits. No skin allergy was observed in guinea pigs following repeated skin exposure. There was no evidence of effects on the nervous system, including delayed effects in chicken (repeated oral doses) or cholinesterase inhibition in rats (single oral doses).

Reduced body weight gains and effects on liver tissues were observed with long-term (2 year) feeding of Glyphosate to mice at high dose level. Reduced body weight gains and eye changes were observed at a high dose level in one long term (2 year) feeding study with rats, while no treatment-related effects occurred in a second study. No adverse effects were observed in feeding studies with dogs. Glyphosate does not produce tumours in any of these studies.

No birth defects were noted in rats and rabbits given Glyphosate orally during pregnancy, even at amounts that produce adverse effects on the mothers. Glyphosate was fed continuously to rats at very high dose levels for 2 successive generations. Toxicity was reported in offsprings from the high dose, a level which also produces adverse effects on the mothers. In a 3 generation study conducted at lower dose levels, no effects were seen on the ability of male or female rats to reproduce.

Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacteria cells.

SECTION 12 : ECOLOGICAL INFORMATION

The following data is based on Glyphosate Acid Technical

Mobility & Bioaccumulation : Refer to the following information
Biodegradability : Refer to the following information
Aquatic Toxicity : Refer to the following information

The results of single exposure (acute) environmental toxicity studies indicate that Glyphosate is no more than slightly toxic to a variety of fish and invertebrates, although it may be highly to slightly toxic to

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some algae. Following longer term exposure (21 days) to high concentrations of Glyphosate, reduced reproduction was observed in the invertebrate *Daphnia magna*. No effects were seen on the ability of fathead minnows to reproduce when fed Glyphosate.

Single exposure environmental toxicity studies also indicate that Glyphosate is practically non toxic by ingestion to honey bees and bobwhite quail and slightly toxic by ingestion to Spanish goats. No effects were seen on the ability of bobwhite quail or mallard ducks to reproduce when fed Glyphosate.

A series of residue and metabolism studies have shown that Glyphosate is very slowly absorbed across the gastro-intestinal membrane and that there is minimal tissue retention and rapid elimination of residues in several animal species including mammals, birds and fish. Thus, it is concluded that Glyphosate will not bioaccumulate.

SECTION 13 : DISPOSAL INFORMATION

Dispose of according to local regulation.

SECTION 14 : TRANSPORT INFORMATION

Follow the precaution indicated in the storage and handling section. Follow all regulations in your country.

SECTION 15 : REGULATORY INFORMATION

Pesticides Act : Class III - Harmful

CPL Regulation : Class - Irritant

Risk Phrases : R36/38 Irritating to eyes and skin

Safety Phrases : S2 Keep out of reach of children.
S24/25 Avoid contact with skin and eyes
S39 Wear eye/face protection

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SECTION 16 : OTHER INFORMATION

- Reference : (a) Material Safety Data Sheet - Tricrown 41% w/w
Date : 6-9-1997
- (b) Material Safety Data Sheet - Karsmex 41% w/w
Date : 10-10-1994
- (c) Material Safety Data Sheet - Liderca 41% w/w
Date : 10-10-1994
- (d) Material Safety Data Sheet - Tribrown 95%
Date : 22 May 2008
- (e) Guidelines for The Classification of Hazardous Chemicals, DOSH 1997
- (f) Guidelines for The Formulation of A Chemical Safety Data Sheet, DOSH 1997
- (g) Guidelines for Labelling of Hazardous Chemicals, DOSH 1997

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.