

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 1 of total 7

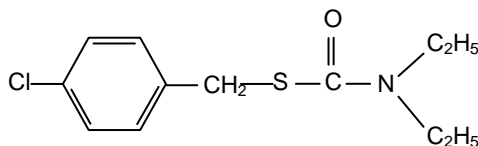
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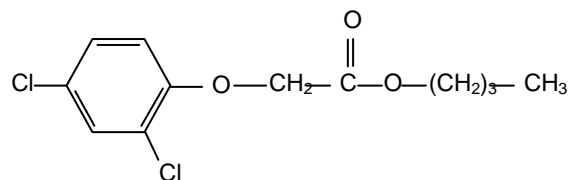
## SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### 1.1 Product Details

Product Name	: Thiobencarb 4% + 2,4-D BE 2% Sand Coated Granule
Trade Name	: SATURN-D
Chemical Name	: (i) S-4-Chlorobenzyl diethylthiocarbamate (Thiobencarb) (ii) Butyl ester of 2,4-dichlorophenoxyacetic acid (2,4-D BE)
Chemical Formula	: (i) $C_{12}H_{16}ClNOS$ (ii) $C_{12}H_{14}Cl_2O_3$
Molar Mass	: (i) 257.5 (ii) 277.1
Chemical Family	: (i) Thiocarbamate (ii) Chlorinated phenoxy
Manufacturer's Code	: -
Use	: Herbicide
Structural Formula	:



*Thiobencarb*



*2,4-D Butyl Ester*

### 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

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 2 of total 7

Date of preparation : 27 April 2004

Date revised : 12 June 2008

## SECTION 2 : COMPOSITION/INFORMATION ON INGREDIENT

Chemical Name	CAS No.	Proportion	Exposure Limit	Toxicity Data
S-4-Chlorobenzyl diethyl thiocarbamate	28249-77-6	4%	Refer to Section 9	Refer to Section 11
Butyl ester of 2,4-dichloro phenoxyacetic acid	94-80-4	2%		
Dispersing Agent	-	< 1%		
Carrier & Others	-	Balance		

## SECTION 3 : PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Reddish granule
Odour	: Pungent odour
Solubility	: Insoluble in water
Boiling Point	: 126 - 129°C at 0.008 mmHg (Pure Thiobencarb) Approx. 140°C at 1 mmHg (abs.) (2,4-D BE Technical)
Melting Point	: 3.3°C (Pure Thiobencarb) Less than -38°C (2,4-D BE Technical)
Vapour Pressure	: Approx. $2.2 \times 10^{-5}$ mmHg at 23°C (Pure Thiobencarb)
Percentage Volatiles	: No data available
Evaporation Rate	: No data available
Vapour Density	: No data available
Specific Gravity	: 1.3 - 1.5
Flash Point	: Not applicable
Autoignition Temperature	: No data available
Flammable Limit (%)	: No data available
Flammability	: 205°C (Thiobencarb Technical)

## SECTION 4 : HAZARD IDENTIFICATION

May cause sensitisation by skin contact.

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 3 of total 7

Date of preparation : 27 April 2004

Date revised : 12 June 2008

## SECTION 5 : FIRST AID MEASURES

- Ingestion : Induce vomiting after drinking water. Get prompt medical attention. General medical treatment for chemical toxication should be followed. Never give fluids or induce vomiting if patient is unconscious or having convulsions.
- Eye contact : Immediately flush eyes 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 to fresh air. Keep warm. Get medical attention.
- Notes to physician :
- Poisoning symptoms : Headache, nausea, dizziness, loss of appetite, vomiting, salivation, diarrhoea, perspiration, blurred vision, respiratory difficulties and muscle twitching.
- Medical treatment : Treatment is symptomatic. Inject atropine sulphate (2 - 4 mg) subcutaneously or intravenously; repeat every 30 minutes until patient is fully atropinised. If swallowed, gastric lavage should be performed if patient is not vomiting. For emergency measures, give activated charcoal followed by emesis and gastric lavage.

## SECTION 6 : FIRE FIGHTING MEASURES

- Extinguishing Media : Foam, CO<sub>2</sub>, dry chemical.
- Fire fighting instruction : Fire fighters should wear full-faced self-contained breathing apparatus and protective clothing.
- Special hazards : May produce toxic fumes on decomposition in a fire.

## SECTION 7 : ACCIDENTAL RELEASE MEASURE

Leak and/or Spill :

Wear protective clothing as indicated in Section 8. Evacuate non essential personnel. Collect the spill into waste container for disposal. Wash the contaminated area with a little water and detergent. Adsorb with inert material such as clay or earth. Collect into the same container for disposal. Prevent the spillage from entering local drainage system.

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 4 of total 7

Date of preparation : 27 April 2004

Date revised : 12 June 2008

## SECTION 8 : HANDLING AND STORAGE

- Handling : Wear pesticide respiratory masks, protective gloves and clothing while handling. Read the label before use. Avoid breathing dust. Avoid contact with skin, eyes or clothing. Do not contaminate water supplies. Provide washing facilities and eye fountain in work area
- Storage : Keep in original containers, tightly closed, in a cool, dry and well-ventilated place. Do not store with animal feeds or foodstuff. Keep out of reach of children or farm animals. Keep away from heat and open flame.

## SECTION 9 : EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limit :

Thiobencarb Technical

ACGIH TLV (1992/93) : No data available

2,4-D BE Technical

ADI (FAO/WHO) 0.3 mg/kg body weight/day

Air : TLV 10 mg/m<sup>3</sup>

Tentative short term exposure limit 20 mg/m<sup>3</sup>

Water : For domestic water supplies on a health protects basis (EPA) 100 µg/L

NOEL, Rainbow trout (96-h LC<sub>50</sub>) 50 mg/L

No effect level, rats (FAO/WHO) 31 mg/kg body weight/day

Engineering measures : Local exhaust ventilation

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

## SECTION 10 : STABILITY AND REACTIVITY

- Conditions to avoid : High humidity, direct sunlight, heat and extreme temperature.
- Incompatible : Strong acid and alkaline.
- Decomposition Products : Produces toxic fumes on decomposition in a fire.
- Hazardous polymerization : No data available
- Stability : Stable under normal conditions.

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 5 of total 7

Date of preparation : 27 April 2004

Date revised : 12 June 2008

## SECTION 11 : TOXICOLOGICAL INFORMATION (TECHNICAL)

Toxicity data :

### Thiobencarb Technical

Acute Oral LD <sub>50</sub>	: (Rat) male	1,033mg/kg
	(Rat) female	1,130mg/kg
	(Mouse) male	1,102mg/kg
	(Mouse) female	1,402mg/kg
Acute Dermal LD <sub>50</sub>	: (Rat/mice)	> 2,000mg/kg
Acute Inhalation LC <sub>50</sub>	: (Rat)	> 42.8mg/kg

### 2,4-D BE Technical

Acute Oral LD <sub>50</sub>	: (Rat)	554.5mg/kg
	(Guinea Pig)	848 mg/kg
	(Rabbits)	424 mg/kg
Acute Dermal LD <sub>50</sub>	: (Rat)	> 4,000 mg/kg

Subchronic toxicity :

### Thiobencarb Technical

NOEL (Rat) male	: 2.5mg/kg/day
NOEL (Rat) female	: 2.8mg/kg/day

Mutagenicity :

### Thiobencarb Technical

Negative (Ames test / Chromosome aberration test)

Carcinogenicity : No data available

Reproductive effect : No data available

Effects of overexposure:

### Thiobencarb Technical

Eye Irritation	: (Rabbit)	No irritation (10 mg/eye)
Skin Irritation	: (Rabbit)	No irritation (1,000 mg/9cm <sup>2</sup> )
Sensitizing Effect	: No data available. However, Kumiai formulated products containing thiobencarb have no sensitizing potential.	

Kumiai Chemical has never faced poisoning problem attributed to thiobencarb on laboratory researchers, factory workers and users, however, over-exposure experiments on animals showed that administration of an extra-ordinary large quantity of thiobencarb may cause hypoactivity, abnormal walking and prostration.

### 2,4-D BE Technical

Headache, weakness, nausea, loss of appetite, vomiting and diarrhoea

Chronic effects : No data available

Target organs : No data available

Medical Conditions Generally Aggravated by exposure : No data available

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 6 of total 7

Date of preparation : 27 April 2004

Date revised : 12 June 2008

## SECTION 12 : ECOLOGICAL INFORMATION (TECHNICAL)

Mobility & Bioaccumulation	:	No data available	
Biodegradability	:	No data available	
Aquatic Toxicity	:		
		<u>Thiobencarb Technical</u>	
		LC <sub>50</sub> (48 hours)	
		: (Carp)	3.4ppm
		( <i>Daphnia magna</i> )	0.1012ppm
Avian Toxicity	:		
		<u>Thiobencarb Technical</u>	
		Oral LD <sub>50</sub>	
		: (Bobwhite quail)	7,800mg/kg
		(Mallard duck)	> 10,000mg/kg
Beneficial Insect	:		
		<u>Thiobencarb Technical</u>	
		Oral LC <sub>50</sub>	
		: (Honeybee)	> 100µg/bee

Phenoxy herbicides at normal use rate appear to have hardly any direct effect on insects. However, when these herbicides are sprayed on plants at flowering stage, it is likely that bees and other honey-sucking insects may receive more effect.

## 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 IV
CPL Regulations	:	Class - Irritant
Risk Phrase	:	R43 May cause sensitisation by skin contact

# MATERIAL SAFETY DATA SHEET

## Introductory Details

Page 7 of total 7

Date of preparation : 27 April 2004

Date revised : 12 June 2008

Safety Phrase : S2 Keep out of reach of children  
S16 Keep away from sources of ignition - No smoking  
S24 Avoid contact with eyes

## **SECTION 16 : OTHER INFORMATION**

Reference : (a) Material Safety Data Sheet - Saturn-D  
Date : 31-12-1999

(b) Material Safety Data Sheet - Saturn Technical  
Date : 26 February 2008

(c) Material Safety Data Sheet - 2,4-D BE Technical  
Date : 31 December 2007

(d) Guidelines for The Classification of Hazardous Chemicals, DOSH 1997

(e) Guidelines for The Formulation of A Chemical Safety Data Sheet, DOSH 1997

(f) 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.