Thiobencarb -MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

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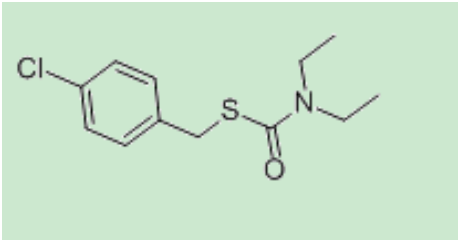
1. Chemical Product Identification

Product Name: Thiobencarb

Molecular Formula: $C_{12}H_{16}ClNOS$

Molecular Weight: 257.8

Structural Formula:



Chemical Name: S-4-chlorobenzyl diethyl(thiocarbamate)

Color: Light yellow

Form: Liquid

Odor: Moderately pungent odor

CAS No.: 28249-77-6

2. Composition / Information on Ingredients

Composition	CAS No.	Content %
Thiobencarb	28249-77-6	50.00
Other ingredients		50.00

3. Hazards Identification

Component	Symbol	R phrases

Thiobencarb	Xn, N	R22, R50/53

More important danger for the man: Cause eye irritation, may cause skin irritation

Dangers for the environment: Moderate toxicity to birds, aquatic organisms and other animals

Physical-chemical dangers: Not applicable

4. First Aid Measures

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

Eye: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Ingestion: If swallowed, drink 1 or 2 glasses of water (or milk) and induce vomiting by touching the back of the throat with finger. If possible, contact a physician, Poison Control Center, or emergency center before inducing vomiting. Do not induce vomiting or give anything by mouth to an unconscious person. Take person and product container to the nearest emergency treatment center.

Inhalation: If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

Note to physician: No specific antidote. Treat symptomatically.

5. Fire-Fighting Measures

Extinguishing media: Water Spray, Foam, Dry Chemical, CO_2.

Don’t use: not applicable

Particular risk: not applicable

Measures of personal protection: safety glasses or goggles, rubber gloves, shoes plus socks, long-sleeved shirt, and long pants.

6. Accidental Release Measures

Personal cautions: safety glasses or goggles, rubber gloves, shoes plus socks, long-sleeved shirt, and long pants.

Cleaning methods

EX: Clean up spill immediately. Absorb spill with inert material (such as dry sand or earth), then place in a chemical waste container. Wash area with soap and water. Pick up wash liquid with additional absorbent and place in a chemical waste container.

Environmental cautions

EX: prevent the contamination of the floor and of beds of water. Isolate contaminated water.

7. Handling and Storage

Handling: Avoid getting in eyes or on skin, or clothing and breathing dust. Remove contaminated clothing immediately. Wash thoroughly after handling.

Storage: Keep in original container. Do not store or transport near food or feed. Do not contaminate food or feed. Do not put concentrate into food or drink containers. Do not dilute concentrate in food or drink containers. Store in a cool, dry place, out of direct sunlight.

Fire and explosion protection: the area must be far from fire and flammable materials.

8. Exposure Controls/Personal Protection

Personal protective equipment

Respiratory protection: approved respirator

Protective gloves: rubber gloves

Eye protection: goggles

Industrial hygiene: use good industrial hygiene. Wear face shield or goggles, elbow length PVC gloves, cotton overalls buttoned to the neck and wrist, washable hat and half face respirator with dust and vapor cartridge. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

9. Physical and Chemical Properties

Appearance: Light yellow homogeneous liquid

Boilting point: Not applicable

Density: 1.1418 g/cm^3

Water solubility: Emulsifies in water

Other solubility: Not applicable

pH value: 3.0-6.0

Flash point: Not applicable

Ignition temperature: Not applicable

10. Stability and Reactivity

Stability: stable under the normal conditions

Conditions to avoid: Fire, heat and high temperature

Products to avoid: Not applicable.

Hazardous decomposition products: Hydrogen chloride, nitrogen oxides, sulfur oxides

11. Toxicological Information

Acute oral LD_{50} for rat: ＞2000 mg/kg

Acute dermal LD_{50} for rat: ＞5000 mg/kg

Inhalation LD50 (4h) for rat: ＞3.6 mg/m^3

Mild irritating to rabbit skin.

Moderate irritating to rabbit eye.

Chronic toxicity: The dermal administration of Thiobencarb to rats, six hours per day, five days per week for three weeks, at doses up to 500 mg/kg/day caused reduced body weight gains, body weight and food efficiency. Slight increases in red, dry and flaky skin were observed. The LOAEL was 40 mg/kg/day. An eight week dietary range-finding study in rats with thiobencarb at doses up to 450 mg/kg/day produced effects consistent with poor palatability (taste) such as weight loss, decreased food consumption, etc. In a 4-week oral toxicity study with thiobencarb technical in dogs with doses of 1, 4, 16 and 64 mg/kg/day, the primary observation was decreased plasma cholinesterase values in the 16 and 64 mg/kg/day dose groups

Reproductive effects: Two generation reproduction studies conducted with thiobencarb technical in rats at dose levels ranging from 2 to 100 mg/kg/day did not impair reproductive performance. Relative and absolute liver and kidney weights were increased in both F0 and F1 generations at 20 and 100 mg/kg/day. Decreased body weight gain was observed at 100 mg/kg/day in both generations of the male and in the F1 female generation. The reproductive toxicity NOAEL was 100 mg/kg/day.

Teratogenic effects: Thiobencarb technical did not cause birth defects when tested in experimental animals. Teratology studies conducted in rats with 5, 25 and 150 mg/kg for gestation days 6 to 19 show no teratogenic effects at any dose level. Treatment with 150 mg/kg did, however, result in reduced maternal body weight gain and in reduced fetal weights. The maternal and developmental NOAELs are 25 mg/kg/day. A teratology study was also conducted in rabbits at dose levels of 2, 20 and 100 mg/kg/day for the day 7-29 gestation period. Maternal body weight gain and mean fetal weights were reduced at 20 and 100 mg/kg/day dose levels, but there were no teratogenic effects. Shortening the treatment period in rabbits to gestation day 6 - 18 reduced maternal and fetal toxicity. Treatment with 20, 100 and 200 mg/kg/day produced no fetal toxicity, teratogenicity or significant maternal effects. Therefore, the maternal NOAEL is 100 mg/kg/day and the developmental NOEL is 200 mg/kg/day (the highest dose tested).

Mutagenic effects: Thiobencarb technical is not expected to pose a genetic hazard. It has been studied in in vitro assays for gene mutation, structural chromosome aberrations and DNA damage/repair as well as in vivo assays measuring micronucleus formation and in the dominant lethal assay. The results for all tests except the in vivo micronucleus test were negative. This single report of a positive response is not cause for concern when evaluated in the context of the oncogenicity, teratogenicity and reproductive toxicity studies.

Carcinogenic effects: Prolonged administration of the active ingredient thiobencarb technical to rats, mice and dogs did not increase their incidence of cancer over that of untreated animals. The primary significant findings were generally attributable to the poor palatability of the diet (e.g. weight loss). The 2 year mouse oncogenicity study demonstrated no oncogenic potential. The systemic NOAEL was 3 mg/kg/day for males and 5 mg/kg/day for females based on histopathological changes in the liver. The 2-year rat oncogenicity study showed no carcinogenicity at 25 mg/kg/day and a systemic NOAEL of 1 mg/kg/day based on decreased body weight gain, food consumption and efficiency and increased blood urea nitrogen. A 1-year dog study showed a systemic NOAEL of 8 mg/kg/day based on decreased body weight gain, increased liver and kidney weights, and hematological and clinical chemistry changes, and a

plasma cholinesterase NOAEL of 1mg/kg/day.

Organ toxicity: Thibencarb is a moderate eye irritant.

12. Ecological And Ecotoxicological Information

Effects on birds:

LD50 for hens 2629 mg/kg

LD50 for mallard ducks＞10000 mg/kg

LD50 for bobwhite quail＞7800 mg/kg

LC50 (8d) for bobwhite quail and mallard ducks＞5000 mg/kg

Effects on aquatic organisms:

LC50 (48h) for carp 3.6 mg/l

LC50 (48h) for bluegill sunfish 2.4 mg/l

LC50 (48h) for Daphnia 0.1 mg/l

Effects on other organisms:

LD50 for bees＞100 μg/bee

13. Disposal Considerations

Product: In accordance with local and national regulations. Do not contaminate ponds waterways or ditches with chemical or used container.

14. Transport Information

Not applicable.

15. Regulatory Information

Not applicable.

16. Other Information

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.