

Folpet-MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

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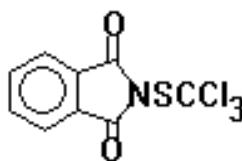
1. Chemical Product Identification

Product Name: Folpet

Molecular Formula: C₉H₄Cl₃NO₂S.

Molecular Weight: 296.56

Structural Formula:



Chemical Name: N- [(Trichloromethyl) thio] phthalimide

Form: Solid

Color: Off-white.

Odor: Faint odor (characteristic).

CAS No.: 133-07-3

2. Composition / Information On Ingredients

Composition	CAS No.	Content %
Folpet	133-07-3	95.0
Other ingredients		5.0

3. Hazards Identification

Human health hazards: Irritating to eyes. May cause sensitization by skin contact.

Environmental hazards: Toxic to aquatic organisms.

4. First Aid Measures

Inhalation: Remove victim to fresh air. Keep victim warm and at rest. If breathing is difficult: give oxygen. If not breathing: apply artificial respiration.

Get medical attention.

Ingestion: Induce vomiting. Never give anything by mouth to an unconscious person. Wash out mouth with water. Consult a doctor.

Skin contact: Remove contaminated clothing. Wash off with plenty of water and soap. Consult a doctor in the event of any complaints.

Eye contact: Wash off with plenty of water for at least 15 minutes. If pain persists, consult an eye specialist.

Notes to a physician: There is no specific antidote. Treat symptomatically and give supportive therapy. If ingested perform gastric lavage and administer activated charcoal.

5. Fire-Fighting Measures

Extinguishing media: In case of a small fire: foam or dry chemical, carbon dioxide. In case of a large fire: Water spray, fog or regular foam.

Hazardous decomposition products: CSCl_2 , HCl, SO_x , NO_x , CO, CO_2

Fire-fighting procedures: Firefighters should wear suitable protective clothing.

Self-contained breathing apparatus. Fight fires from a protected location. Dike fire control water for later disposal.

6. Accidental Release Measures

Action to take for spills: Collect spilled material with shovel, place into a clean container and cover container loosely. Avoid contact, isolate area and keep animals and unprotected persons. Confine spills.

Personal Precautions: Use appropriate protection

Environmental Precautions: Dispose of this material and its container at hazardous or special waste collection point. If the product has contaminated surface water, inform the appropriate authorities.

7. Handling And Storage

Handling: Avoid generation of dust. Do not breathe dust. Avoid contact with skin and eyes.

Storage: Keep locked up. Keep container tightly closed. Keep only in the original container in a cool, well-ventilated place. Keep container dry.

8. Exposure Controls/Personal Protection

Engineering measures: Facilities storing or utilizing this material should be equipped with an eyewash facility and safety shower.

Hygiene measures: Wash hands thoroughly after handling. Wash clothing separately before re-use.

Respiratory system: During spraying wear suitable respiratory equipment.

Skin and body: Wear suitable protective clothing and chemical resistant boots.

Hands: Wear suitable gloves.

Eyes: Safety goggles or face shield.

9. Physical and Chemical Properties

Melting point: 117°C

Vapor pressure: 2.10×10^{-5} Pa @ 25°C

Density : 1.72 @ 20°C

Partition coefficient : $Kow_{logP}=3.11$

PH: 6

Solubility in water: Insoluble in water (0.8mg/L)

Flammability: Not flammable

Explosivity: Not explosive

10. Stability and Reactivity

Stability: Stable under normal dry conditions.

Conditions to avoid : Protect from (sun)light, open flame sources of heat and humidity.

Materials to avoid: Alkali materials, such as lime and Bordeaux mixture will reduce fungicidal activity.

Hazardous reactions : Hazardous polymerization will not occur.

Hazardous decomposition products: $CSCl_2$, HCl, SOX, NOX, CO, CO₂

11. Toxicological Information

Acute toxicity

Oral: LD₅₀ > 9000 mg/kg (rat).

Dermal: LD₅₀ > 4500 mg/kg (rabbit).

Inhalation: Not applicable.

Skin irritation: Mildly irritating (rabbit).

Eye irritation: Irritating to eyes (rabbit).

Sensitization: Guinea pig maximization test: sensitizer.

Reproductive Effects: A 2-generation reproductive study in rats produced a parental NOEL of 34.5 mg/kg/day. The same study showed decreased weight gain in F1 offspring. The NOEL in F2 matings was 40 mg/kg/day based on decreased body weight gain, decreased fertility of males and a Lowest Effect Level (LEL) of 180 mg/kg/day. Another study reported no significant effect on reproductive performance over three generations in rats at 1,000 mg/kg diet. The result from one study of pregnant hamsters given a single dose of between 500 and 900 mg/kg on days seven or eight of gestation, was an increase in fetal mortality and the production of some abnormal fetuses. Chronic administrations to pregnant rabbits of a cumulative dose of 488 mg/kg for 13 days produced adverse effects on fertility. Treatment of male mice by Bateman's dominant lethal procedure did not induce dominant lethal mutations as measured by increase in early post-implantation deaths. Chronic inhalation exposure to folpet showed an increase of fetal mortality in an inhalation study of pregnant mice exposed to 491 mg/m³/4 hours/day for 8 days

Teratogenic Effects: Folpet was found to be positive in producing developmental effects in both rabbits and rats. In rabbits, the developmental NOEL was 10 mg/kg and the LEL was 20 mg/kg (hydrocephalus, domed skull, and irregularly shaped fontanelles). In rats, the NOEL was 60 mg/kg and the developmental LEL was 360 mg/kg.

Mutagenic Effects: In both *E. coli* and *S. typhimurium*, reverse mutations occurred, with a positive direct acting mutagen. In vivo, the *Drosophila* sex-linked recessive assay was positive using folpet. In a mouse somatic cell mutation assay, the results were negative, although a significant pup mortality occurred at all dose levels.

Carcinogenic Effects: In a carcinogenicity study in mice, folpet was found to be a carcinogen with a dose-related increased incidence of adenocarcinomas in the duodenum (a rare neoplasma in CD-1 mice) in all dose groups (142.321, 714.3 and 1714.2 mg/kg/day respectively). Another carcinogenicity study in mice also found folpet to be a positive carcinogen with a dose-related increased incidence of adenocarcinomas in the duodenum (a rare neoplasma in B6C3F1 mice) in all dose groups (142.9, 714.3 and 1428.6 mg/kg/day respectively). In another study, Sprague-Dawley rats were fed a diet of 200, 800, or 3,200 ppm of folpet. No carcinogenic effects were reported.

Organ Toxicity: In a 90-day feeding study in rats, the NOEL was established at 3,000 ppm and the LEL was 10,000 ppm. Noted effects were decreased brain weight and decreased total blood protein including albumin.

12. Ecological And Ecotoxicological Information

Effects on Birds: Acute oral studies indicated that folpet is slightly toxic to upland game bird species. Subacute dietary toxicity studies with bobwhite quail and mallard ducks also indicate that folpet is slightly toxic to birds when it is ingested in the diet of these birds. The avian reproductive studies indicate that technical folpet is not expected to cause reproductive impairment. Folpet is considered slightly toxic to avian species. The LC50 for bobwhite quail is >2,510 mg/kg and the LC50 for the mallard duck is >5,000 ppm.

Effects on Aquatic Organisms: Studies with typical end-use products indicate that folpet is highly toxic to both rainbow trout and bluegill sunfish. Rainbow trout were the most

sensitive species and the folpet product tested was classified in the very highly toxic range of toxicity for this species. The 96-hr LC50 for bluegill sunfish is 675 ppb and the 96-hr LC50 for rainbow trout is 185 ppb. Folpet is characterized as being "highly toxic" to both coldwater and warmwater fish. Data from a study with a typical end-use product of folpet indicate that folpet is toxic to aquatic invertebrates. The 48-hr LC50 for *Daphnia magna* is 0.60 ppm, which is considered very highly toxic to aquatic invertebrates.

Effects on Other Animals (Nontarget species): Folpet is considered relatively non-toxic to honeybees.

13. Disposal Considerations

Disposal according to the local legislation.

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.