

## Material Safety Data Sheet

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Version 1.1

According to 91/155/EEC

## 1 - Product and Company Information

Product Name	CAPTAN PESTANAL (1,2,3,6-TETRAHYDRO-N-(T RICHLOROMETHYLTHIO)PHthalimide), 250 MG
Product Number	45366
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

## 2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
CAPTAN	133-06-2	205-087-0	613-044-00-6

Formula	C9H8Cl3NO2S
Molecular Weight	300.6 AMU
Synonyms	Aacaptan * Agrosol S * Agrox 2-way and 3-way * Amercide * Bangton * Bean Seed Protectant * Captab * Captaf * Captaf 85W * Captan * Captan (ACGIH) * Captancapteneet 26,538 * Captane * Captan-streptomycin 7.5-0.1 potato seed piece protectant * Captan 50W * Captex * ENT 26,538 * Essofungicide 406 * FLIT 406 * Fungus ban type II * Glyodex 3722 * Granox PFM * Gustafson captan 30-DD * Hexacap * 1H-Isoindole-1,3(2H)-dione, 3a,4,7,7a-tetrahydro-2-((trichloromethyl)thio)- * Kaptan * LE Captane (French) * Malipur * Merpan * Micro-check 12 * Neracid * NCI-C00077 * Orthocide * Orthocide 7.5 * Orthocide 50 * Orthocide 406 * Osocide * SR406 * Stauffer captan * 3a,4,7,7a-Tetrahydro-N-(trichloromethanesulphenyl )phthalimide * 1,2,3,6-Tetrahydro-N-(trichloromethylthio)phthali mide * Trichlormethylthioamid kyseliny 1,2,3,6-tetrahydroftalove (Czech) * N-(Trichlor-methylthio)-phthalimid (German) * N-Trichloromethylmercapto-4-cyclohexene-1,2-dicar

## 3 - Hazards Identification

## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Limited evidence of a carcinogenic effect. Toxic by inhalation.  
Risk of serious damage to eyes. May cause sensitization by skin  
contact. Very toxic to aquatic organisms.  
Carc. Cat.3

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## 4 - First Aid Measures

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### AFTER INHALATION

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

### AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

### AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

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## 5 - Fire Fighting Measures

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### EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

### SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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## 6 - Accidental Release Measures

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PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL  
Evacuate area.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

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## 7 - Handling and Storage

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### HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

### STORAGE

Conditions of Storage: Keep tightly closed.

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## 8 - Exposure Controls / Personal Protection

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### ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

## GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

## EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	5 mg/m3
Poland		NDSCh	-
Poland		NDSP	

## EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	5 mg/m3

Remarks: K

## EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	5 mg/m3

Remarks: NL

## EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	5 mg/m3

Remarks: K

## EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	5 mg/m3

Remarks: E

## EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	5 mg/m3
OEL	STEL	15 mg/m3

## PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator in nonventilated areas and/or for exposure above the TLV or PEL.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

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## 9 - Physical and Chemical Properties

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Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	N/A	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	N/A	
SG/Density	N/A	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	

Saturated Vapor Conc.	N/A
Evaporation Rate	N/A
Bulk Density	N/A
Decomposition Temp.	N/A
Solvent Content	N/A
Water Content	N/A
Surface Tension	N/A
Conductivity	N/A
Miscellaneous Data	N/A
Solubility	N/A

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## 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Materials to Avoid: Strong bases.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## 11 - Toxicological Information

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RTECS NUMBER: GW5075000

### ACUTE TOXICITY

LDLO  
Oral  
Human  
1071 mg/kg

LD50  
Oral  
Rat  
9000 mg/kg

LC50  
Inhalation  
Rat  
> 5,700 mg/m<sup>3</sup>  
2H

LD50  
Skin  
Rat  
> 5000 mg/kg

LD50  
Oral  
Mouse  
7000 mg/kg

LC50  
Inhalation  
Mouse  
4,500 mg/m<sup>3</sup>  
2H

LD50

Intraperitoneal  
Mouse  
30 MG/KG

#### SENSITIZATION

Skin: May cause allergic skin reaction.

#### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.  
Eye Contact: Causes eye irritation.  
Inhalation: Material may be irritating to mucous membranes and upper respiratory tract.  
Multiple Routes: May be harmful by inhalation, ingestion, or skin absorption.

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Mouse  
Route of Application: Oral  
Exposure Time: 80W  
Result: Tumorigenic:Neoplastic by RTECS criteria.  
Gastrointestinal:Tumors.

Mouse  
Route of Application: Oral  
Exposure Time: 80W  
Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Gastrointestinal:Tumors.

#### IARC CARCINOGEN LIST

Rating: Group 3

#### CHRONIC EXPOSURE - MUTAGEN

Result: Laboratory experiments have shown mutagenic effects.

Human  
99 UMOL/L  
Cell Type: fibroblast  
DNA damage

Human  
1 UMOL/L  
Cell Type: fibroblast  
Unscheduled DNA synthesis

Human  
5 MG/L  
Cell Type: lymphocyte  
DNA inhibition

Human  
8300 NMOL/L  
Cell Type: HeLa cell  
DNA inhibition

Human  
1 MG/L  
Cell Type: lymphocyte

Other mutation test systems

Human  
10 MG/L  
Cell Type: lung  
Cytogenetic analysis

Human  
10 UMOL/L  
Cell Type: lymphocyte  
Sister chromatid exchange

Rat  
500 MG/KG  
Intraperitoneal  
DNA inhibition

Rat  
500 MG/KG  
Intraperitoneal  
Other mutation test systems

Rat  
800 UG/L  
Cell Type: Other cell types  
DNA inhibition

Rat  
50 MG/KG  
Intraperitoneal  
Cytogenetic analysis

Rat  
500 MG/KG  
Oral  
5D  
Dominant lethal test

Mouse  
200 MG/KG  
Oral  
2D  
Micronucleus test

Mouse  
250 MG/KG  
Intraperitoneal  
Cytogenetic analysis

Mouse  
50 MG/KG  
Oral  
Cytogenetic analysis

Mouse  
1000 MG/KG  
Oral  
5D  
Dominant lethal test

Mouse  
50 MG/KG

Oral  
Mutation in mammalian somatic cells.

Mouse  
1500 MG/KG  
Cell Type: S. typhimurium  
Host-mediated assay

Mouse  
1500 MG/KG  
Cell Type: S. marcescens  
Host-mediated assay

Mouse  
800 MG/KG  
Cell Type: E. coli  
Host-mediated assay

Mouse  
1 GM/KG  
Unreported  
5D  
sperm

Hamster  
2 MG/L  
Cell Type: kidney  
Morphological transformation.

Hamster  
10 MG/L  
Cell Type: lung  
Cytogenetic analysis

Hamster  
6 UMOL/L  
Cell Type: lung  
Sister chromatid exchange

Hamster  
950 PMOL/L  
Cell Type: ovary  
Sister chromatid exchange

Hamster  
5 MG/L  
Cell Type: lung  
Mutation in mammalian somatic cells.

Hamster  
250 UG/L  
Cell Type: ovary  
Mutation in mammalian somatic cells.

Cattle, Horse  
1 MMOL/L  
Cell Type: liver  
Other mutation test systems

Mammal  
160 UMOL/L  
Cell Type: lymphocyte

## DNA inhibition

Mammal

4 MG/L

Cell Type: kidney

Other mutation test systems

Mammal

1 MG/L

Cell Type: kidney

Cytogenetic analysis

## CHRONIC EXPOSURE - TERATOGEN

Species: Rat

Dose: 500 MG/KG

Route of Application: Oral

Exposure Time: (5D MALE)

Result: Effects on Embryo or Fetus: Fetal death.

Species: Mouse

Dose: 900 MG/KG

Route of Application: Oral

Exposure Time: (9-14D PREG)

Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Mouse

Dose: 900 MG/KG

Route of Application: Subcutaneous

Exposure Time: (9-14D PREG)

Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Hamster

Dose: 300 MG/KG

Route of Application: Oral

Exposure Time: (8D PREG)

Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Hamster

Dose: 200 MG/KG

Route of Application: Oral

Exposure Time: (8D PREG)

Result: Effects on Embryo or Fetus: Fetal death.

Species: Hamster

Dose: 750 MG/KG

Route of Application: Oral

Exposure Time: (7D PREG)

Result: Specific Developmental Abnormalities: Central nervous system.

## CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat

Dose: 2500 MG/KG

Route of Application: Oral

Exposure Time: (6-10D PREG)



Result: Maternal Effects: Uterus, cervix, vagina.

Species: Rat

Dose: 25 GM/KG

Route of Application: Oral

Exposure Time: (6-10D PREG)

Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).

Species: Rat

Dose: 25 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (14D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Rat

Dose: 25 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (6D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Specific Developmental Abnormalities: Eye, ear.

Species: Rat

Dose: 105 MG/KG

Route of Application: Unreported

Exposure Time: (10-16D PREG)

Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated ). Effects on Fertility:

Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Newborn: Sex ratio.

Species: Mouse

Dose: 250 MG/KG

Route of Application: Oral

Exposure Time: (5D MALE)

Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Mouse

Dose: 900 MG/KG

Route of Application: Subcutaneous

Exposure Time: (9-14D PREG)

Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Embryo or Fetus:

Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death.

Species: Dog

Dose: 1890 MG/KG

Route of Application: Oral

Exposure Time: (1-63D PREG)

Result: Effects on Newborn: Stillbirth.

Species: Rabbit

Dose: 244 MG/KG

Route of Application: Oral  
Exposure Time: (6-18D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g.,  
dead and/or resorbed implants per total number of implants).

Species: Hamster

Dose: 3750 MG/KG

Route of Application: Oral

Exposure Time: (1-15D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g.,  
dead and/or resorbed implants per total number of implants).

CMR CAT.: Carc. Cat.3

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## 12 - Ecological Information

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No data available.

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## 13 - Disposal Considerations

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### SUBSTANCE DISPOSAL

Dissolve or mix the material with a combustible solvent and burn  
in a chemical incinerator equipped with an afterburner and  
scrubber. Observe all federal, state, and local environmental  
regulations.

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## 14 - Transport Information

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### RID/ADR

Non-hazardous for road transport.

### IMDG

Non-hazardous for sea transport.

### IATA

Non-hazardous for air transport.

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## 15 - Regulatory Information

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### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 613-044-00-6

INDICATION OF DANGER: T N

Toxic. Dangerous for the environment.

R-PHRASES: 40 23 41 43 50

Limited evidence of a carcinogenic effect. Toxic by inhalation.  
Risk of serious damage to eyes. May cause sensitization by skin  
contact. Very toxic to aquatic organisms.

S-PHRASES: 26 29 36/37/39 45 61

In case of contact with eyes, rinse immediately with plenty of  
water and seek medical advice. Do not empty into drains. Wear  
suitable protective clothing, gloves, and eye/face protection.  
In case of accident or if you feel unwell, seek medical advice  
immediately (show the label where possible). Avoid release to  
the environment. Refer to special instructions/safety data  
sheets.

### SWITZERLAND

SWISS POISON CLASS: 4

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## 16 - Other Information

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### WARRANTY

The above information is believed to be correct but does not

purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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