

# SAFETY DATA SHEETS

According to Regulation (EU) No.1907/2006, Regulation (EU) No. 1272/2008 and their subsequent amendments and corrigenda

Version: 1.0  
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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

<b>Product name</b>	BRODIFACOUM TC
<b>Substance name</b>	4-hydroxy-3-(3-(4'-bromo-4-biphenyl)-1,2,3,4-tetrahydro-1-naphthyl)coumarin
<b>EC number</b>	259-980-5
<b>CAS number</b>	56073-10-0
<b>REACH Registration number</b>	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
<b>Other means of identification</b>	
<b>Other names</b>	3-[3-(4'-bromobiphenyl-4-yl)-1,2,3,4-tetrahydro-1-naphthyl]-4-hydroxycoumarin

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

<b>Identified uses</b>	for industry use only
<b>Uses advised against</b>	no data available
<b>Reason why uses advised against</b>	no data available

### 1.3. Details of the supplier of the safety data sheet

<b>Details of the supplier</b>	
<b>Company</b>	Siyang Rodenticide Factory.
<b>Address</b>	North of Wujiang Road and west of Gedonghe Road in Siyang Economic Development Zone, Siyang County, Jiangsu Province, China 223700.
<b>Telephone</b>	+ 86 527 853 776 67
<b>Details of the non-Community manufacturer or formulator</b>	
<b>Company</b>	Siyang Rodenticide Factory.
<b>Address</b>	North of Wujiang Road and west of Gedonghe Road in Siyang Economic Development Zone, Siyang County, Jiangsu Province, China 223700.
<b>Telephone</b>	+ 86 527 853 776 67
<b>E-mail address of competent person</b>	export@rodenticide.com.cn

### 1.4. Emergency telephone number

<b>Emergency telephone number</b>	+ 86 527 853 776 67
<b>Opening hours</b>	Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT+8 hours).

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### 2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP)

Acute Tox. 1,H300  
Acute Tox. 1,H310  
Acute Tox. 1,H330  
STOT RE 1,H372  
Aquatic Acute 1,H400  
Aquatic Chronic 1,H410  
Repr. 1A,H360

#### 2.1.2. Additional information

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

### 2.2. Label elements

#### Labelling according to Regulation (EC) No 1272/2008 [CLP]

##### Pictogram(s)



**Signal word** Danger

<b>Hazard statement(s)</b>	H300 Fatal if swallowed. H310 Fatal in contact with skin. H330 Fatal if inhaled. H372 Causes damage to organs through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects. H360D May damage the unborn child.
<b>Precautionary statement(s)</b>	P260 Do not breathe dust/fume/gas/mist/vapours/spray. P273 Avoid release to the environment. P391 Collect spillage. P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor/... P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308+P313 IF exposed or concerned: Get medical advice/attention.
<b>Supplemental Hazard information (EU)</b>	no data available

### 2.3. Other hazards

no data available

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## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
4-hydroxy-3-(3-(4'-bromo-4-biphenyl)-1,2,3,4-tetrahydro-1-naphthyl)coumarin	BRODIFACOUM	56073-10-0	259-980-5	100%

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## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### General notes

Medical attention is required. Consult a doctor. Show this safety data sheet (SDS) to the doctor in attendance.

#### Following inhalation

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### In case of skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### In case of eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### If swallowed

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### 4.2. Most important symptoms and effects, both acute and delayed

no data available

### 4.3. Indication of any immediate medical attention and special treatment needed

VETERINARY: Injured capillaries cannot be mended, but other measures may save the animal. Restraint and handling should be minimized. A sedative or tranquilizer may be of assistance in restraint, calming ...and reducing locomotion, thus decr tissue oxygen demand. Oxygen may be given, but manual pumping of chest is not advisable. Dyspnea may be relieved by thoracentesis. Clotting factors should be provided in form of blood transfusion. Warfarin should be antagonized with slow iv injection of vitamin K1. Dogs and cats are /dosed/ ...for 2 or more days, using im route. Larger animals are given... oral vitamin K1 ...administered daily for 4-6 days. The vitamin will not evoke a sudden dramatic cure; but bleeding tendency will gradually abate as clotting factors begin to be synthesized ... Menadione (vitamin K3) is not as effective as vitamin K1 ... Residual defects such as lameness or CNS signs from localized hemorrhages may disappear with gradual resorption of extravasated blood. Liver damage may be compensated by regeneration of hepatic cells. Warfarin

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## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

Heating of containers will cause a pressure rise, with the risk of bursting and subsequent ignition. Fire-exposed containers should be kept cool by spraying with water.

### 5.2. Special hazards arising from the substance or mixture

no data available

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

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## SECTION 6: Accidental release measures

## 6.1. Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

## 6.2. Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

## 6.3. Methods and materials for containment and cleaning up

Dry spillages should be collected at once, by suction, and disposed of as toxic waste, according to local legislation.

## 6.4. Reference to other sections

For disposal suggestions see section 13. For exposure controls / personal protection suggestions see section 8.

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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Handling in a well-ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### 7.2. Conditions for safe storage, including any incompatibilities

Keep container closed to maintain bait freshness.

### 7.3. Specific end use(s)

Main uses of the chemical are mentioned in section 1.2. No other specific uses are stipulated.

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## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters Occupational

Exposure limit values no available

### 8.2. Exposure controls

#### 8.2.1. Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

#### 8.2.2. Individual protection measures, such as personal protective equipment

##### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

##### Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands.

##### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

##### Thermal hazards

no data available

#### 8.2.3. Environmental exposure controls

See section 6.2.

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## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance	White to off-white powder
Odour	Odorless
Odour threshold	no data available
pH	4.0-8.0
Melting point/freezing point	232°C (Decomp) (98.7 % purity)
Initial boiling point and boiling range	678.995°C at 760 mmHg
Flash point	343.5°C
Evaporation rates	no data available
Flammability	no data available
Upper/lower flammability or explosive limits	no data available
Vapour pressure	1.1X10 <sup>-18</sup> mm Hg at 25 deg C (est)
Vapour density	no data available
Relative density	1.39 g/cm <sup>3</sup> (20°C)
Solubility(ies)	In water, 0.24 mg/L at 20 deg C and pH 7.4

<b>Partition coefficient n-octanol/water</b>	log Kow = 8.5 (est)
<b>Auto-ignition temperature</b>	no data available
<b>Decomposition temperature</b>	no data available
<b>Viscosity</b>	no data available
<b>Explosive properties</b>	no data available
<b>Oxidising properties</b>	no data available

## 9.2. Other information

no data available

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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

no data available

### 10.2. Chemical stability

It is very stable in the environment with no loss after 30 days' exposure to direct sunlight

### 10.3. Possibility of hazardous reactions

Not flammable or combustible.

### 10.4. Conditions to avoid

no data available

### 10.5. Incompatible materials

no data available

### 10.6. Hazardous decomposition products

When heated to decomposition it emits toxic fumes of Br-

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## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute toxicity

- Oral: LD50 rat oral 0.3 mg/kg (WHO)
- Inhalation: LD50 Rat (young adult; Wistar-derived; male) inhalation 0.00486 mg/L/4 hr (based on particulate concentration) Brodifacoum technical 96.1% a.i.
- Dermal: LD50 Rat percutaneous >50 mg/kg bw

#### Skin corrosion/irritation

no data available

#### Serious eye damage/irritation

no data available

#### Respiratory or skin sensitization

no data available

#### Germ cell mutagenicity

no data available

#### Carcinogenicity

no data available

#### Reproductive toxicity

no data available

#### STOT-single exposure

no data available

#### STOT-repeated exposure

no data available

#### Aspiration hazard

no data available

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## SECTION 12: Ecological information

### 12.1. Toxicity

- Toxicity to fish: LC50; Species: /Oncorhynchus mykiss/ (Rainbow trout); Conditions: flow through system; Concentration: 0.051 mg/L /from table
- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water Flea) age <24 hr; Conditions: freshwater, static; Concentration: 980 ug/L for 48 hr (95% confidence interval: 900-1800 ug/L); Effect: intoxication, immobilization /93.3% purity
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

## 12.2. Persistence and degradability

AEROBIC: Brodifacoum degraded with a half-life of 157 days in sandy clay loam soil (75% of 0.33 bar moisture capacity) incubated in the dark at 21 deg C. No other volatile degradates besides CO<sub>2</sub> were identified, which comprised 36% of the applied (14)C at 52 weeks post treatment (1).

## 12.3. Bioaccumulative potential

An estimated BCF of 570 was calculated for brodifacoum (SRC), using a log K<sub>ow</sub> of 8.5(1) and a regression-derived equation (2). According to a classification scheme (3), this BCF suggests the potential for bioconcentration in aquatic organisms is high (SRC).

## 12.4. Mobility in soil

Using a structure estimation method based on molecular connectivity indices (1), the K<sub>oc</sub> for brodifacoum can be estimated to be 1.4X10<sup>+5</sup>(SRC). According to a classification scheme (2), this estimated K<sub>oc</sub> value suggests that brodifacoum is expected to be immobile in soil.

## 12.5. Results of PBT and vPvB assessment

no data available

## 12.6. Other adverse effects

no data available

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## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## SECTION 14: Transport information

### 14.1. UN Number

ADR/RID: UN3027

IMDG: UN3027

IATA: UN3027

### 14.2. UN Proper Shipping Name

ADR/RID: COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC

IMDG: COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC

IATA: COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC

### 14.3. Transport hazard class(es)

ADR/RID: 6.1

IMDG: 6.1

IATA: 6.1

### 14.4. Packing group

ADR/RID: I

IMDG: I

IATA: I

### 14.5. Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

### 14.6. Special precautions for user

no data available

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

no data available

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## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Chemical name	Common names and synonyms	CAS number	EC number
4-hydroxy-3-(3-(4'-bromo-4-biphenyl)-1,2,3,4-tetrahydro-1-naphthyl)coumarin	BRODIFACOUM	56073-10-0	259-980-5
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

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## SECTION 16: Other information

### Indication of changes

## Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

## Key literature references and sources for data

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pageID=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en)
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

## Full text of H-Statements referred to under sections 2 and/or 3.

<b>Acute Tox. 1, H300</b>	Acute toxicity - Oral, Category 1
<b>Acute Tox. 1, H310</b>	Acute toxicity - Dermal, Category 1
<b>Acute Tox. 1, H330</b>	Acute toxicity - Inhalation, Category 1
<b>STOT RE 1, H372</b>	Specific target organ toxicity – repeated exposure, Category 1
<b>Aquatic Acute 1, H400</b>	Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1
<b>Aquatic Chronic 1, H410</b>	Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1
<b>Repr. 1A, H360</b>	Reproductive toxicity, Category 1A
<b>H300</b>	Fatal if swallowed.
<b>H310</b>	Fatal in contact with skin.
<b>H330</b>	Fatal if inhaled.
<b>H372</b>	Causes damage to organs through prolonged or repeated exposure.
<b>H400</b>	Very toxic to aquatic life.
<b>H410</b>	Very toxic to aquatic life with long lasting effects.
<b>H360</b>	May damage fertility or the unborn child.

## Advice on any training appropriate for workers to ensure protection of human health and the environment

Provide sufficient information, guidance and training to operating personnel.

*Disclaimer: 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. We as supplier shall not be held liable for any damage resulting from handling or from contact with the aboveproduct.*