

SAFETY DATA SHEETS

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

Version: 1.0
Creation Date: Mar. 5, 2022
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	BROMADIOLONE TC
Substance name	3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxy-2-benzopyrone
EC number	249-205-9
CAS number	28772-56-7
REACH Registration number	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.
Other means of identification	
Other names	3-[3-(4'-bromobiphenyl-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxycoumarin; 3-[3-Bromo[1,1'-biphenyl]-4-yl]-3-hydroxy-1-phenylpropyl]- 4-hydroxy-2H-1-benzopyran-2-one

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

Identified uses	for industry use only
Uses advised against	no data available
Reason why uses advised against	no data available

1.3. Details of the supplier of the safety data sheet

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

1.4. Emergency telephone number

Emergency telephone number	+ 86 527 853 776 67
Opening hours	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. 1B,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

Hazard statement(s)	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.
Precautionary statement(s)	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.
Supplemental Hazard information (EU)	no data available

2.3. Other hazards

no data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxy-2-benzopyrone	BROMADIOLONE	28772-56-7	249-205-9	100%

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

The compound is toxic by oral exposure. (EPA, 1998)

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 & 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 (20 mL/kg, 1/2 injected quickly). Warfarin should be antagonized with slow iv injection of vitamin K1. Dogs and cats are given 5 mg/kg. This dose is repeated for 2 more days, using im route. Larger animals are given 0.5 to 1 mg/kg, and oral vitamin K1 should be admin 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

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Non-Specific -- Coumarin Derivative Pesticide, Solid, n.o.s.) Fire may produce irritating or poisonous gases. Runoff from fire control water may give off poisonous gases. Runoff from fire control or dilution water may cause pollution. When heated to decomposition, it emits toxic fumes of bromine containing compounds. (EPA, 1998)

5.3. Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

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

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

6.4. Reference to other sections

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

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 tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)

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

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/flame 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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	White powder.
Odour	Odorless
Odour threshold	no data available
pH	5.0-9.0
Melting point/freezing point	198.3-199.8°C (approx 100% purity)
Initial boiling point and boiling range	687°C at 760 mmHg
Flash point	369.3°C
Evaporation rates	no data available
Flammability	no data available
Upper/lower flammability or explosive limits	no data available
Vapour pressure	0mmHg at 25°C

Vapour density	no data available
Relative density	1.454 g/cm ³
Solubility(ies)	In water, >1.14X10 ⁺⁴ at pH 5, 2.48X10 ⁻³ at pH 7, 0.180 at pH 9 (all in g/L at 20 deg C)
Partition coefficient n-octanol/water	log Kow > 5 (pH 4-5, 20-25 deg C); log Kow = 3.8-4.1 (pH 6-7, 20-25 deg C); log Kow = 2.5-3.2 (pH 9-10, 20-25 deg C); log Kow = 4.3 (in purified water at 23 deg C, pH not stated)
Auto-ignition temperature	no data available
Decomposition temperature	no data available
Viscosity	no data available
Explosive properties	no data available
Oxidising properties	no data available

9.2. Other information

no data available

SECTION 10: Stability and reactivity

10.1. Reactivity

No rapid reaction with air. No rapid reaction with water.

10.2. Chemical stability

Thermally stable below 200 deg C. technical, 97% pure

10.3. Possibility of hazardous reactions

no data available

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-.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- Oral: LD50 Rat oral 1.125 mg/kg (WHO)
- Inhalation: no data available
- Dermal: no data available

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

SECTION 12: Ecological information

12.1. Toxicity

- Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill); Conditions: freshwater, static; Concentration: 3000 ug/L for 96 hr

(95% confidence interval: 2400-3700 ug/L)

- Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water Flea) age <24 hr; Conditions: freshwater, flow through; Concentration: 2000 ug/L for 48 hr (95% confidence interval: 1800-2600 ug/L); Effect: intoxication, immobilization /98.75% purity
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2. Persistence and degradability

AEROBIC: Using OECD 301B (CO₂ evolution method), bromadiolone showed 0% degradation after the 28-day incubation period which classified the compound as not readily biodegradable (1). Bromadiolone was also found to be not readily biodegradable using OECD 301D (closed bottle method) where maximum degradation reached only 31% (1). Using OECD 302D (CO₂ production measured as inorganic carbon in mixed micro-organism populations), bromadiolone degradation reached a maximum of only 2% which classified the compound as not inherently biodegradable (1).

12.3. Bioaccumulative potential

Using bluegill sunfish (*Lepomis macrochirus*) and the OECD 305E method, bromadiolone was found to have a maximum BCF of 460 for whole fish (1). In a second study using channel catfish (*Ictalurus punctatus*), the whole fish BCF was 74 after 14 days (1). In both of these studies the BCF reliability was considered low due, in part, to high mortality in the exposed group of fish (1). A fish bioconcentration study with rainbow trout (*Oncorhynchus mykiss*) was performed, but it failed due to high mortalities of the fish (1). An estimated BCF range of 125 to >513 was calculated in fish for bromadiolone (SRC), using measured log K_{ow} values of >5.0 at pH 4-5 and 4.07 at pH 7(1) and a regression-derived equation (2). According to a classification scheme (3), the estimated BCF values and whole fish BCF value in Bluegill sunfish suggest the potential for bioconcentration in aquatic organisms is high (SRC).

12.4. Mobility in soil

In one laboratory soil adsorption study, bromadiolone was found to have K_{oc} values ranging from 1563-1709 (mean of 1632) (1). In another sorption study using five different soil types, bromadiolone had K_{oc} values ranging from 3530-41600 with three of the five values above 4000(1). According to a classification scheme (2), these K_{oc} values suggest that bromadiolone adsorption is expected to range from low mobility in soil to being immobile in soil. Results of laboratory soil column leaching and aged leaching studies indicate that bromadiolone and any potential degradation products, even if released indirectly to soil in small quantities, are not likely to move through the soil profile (1).

12.5. Results of PBT and vPvB assessment

no data available

12.6. Other adverse effects

no data available

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.

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

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
3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxy-2-benzopyrone	BROMADIOLONE	28772-56-7	249-205-9
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.

SECTION 16: Other information

Indication of changes

Version 1.0 Initial issue.

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
- 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.

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