

MATERIAL SAFETY DATA SHEET

This document has been prepared according to directive 2001/58 EC.

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of the substance:**Common name:** Bromadiolone**Other name:**
a) 3-[(1*RS*,3*RS*;1*RS*,3*SR*)-3-(4'-bromobiphenyl-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxycoumarin (IUPAC)
b) 3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxy-2*H*-1-benzopyran-2-one (CAS)**Product name:**

ADOLIX WHEAT BAIT

Use of the preparation:

Rodenticide, as a bait made of cereal grains.

Manufacturer:

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2. HAZARDS IDENTIFICATION

Product classification:

The formulation doesn't classify as hazardous according to directive 1999/45/EC.

3. COMPOSITION/INFORMATION OF INGREDIENTS

Composition:

Substance	EC/EINECS no.	CAS no.	Concentration (%)	Classification according 67/548/EC		Classifiaction according 1272/2008/EC
				Symbol	Risk phrase	
Bromadiolone	249-205-9	28772-56-7	0.005%	T+ N	R27/28 R48/24/25 R50/53	Acute Tox. 1 H330 Acute Tox. 1 H310 Acute Tox. 1 H300 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Denatonium benzoate	223-095-2	3734-33-6	2.5%	Xn Xi	R20/22 R38-41 R52/53	Acute Tox. 2, H330 Eye Dam 1, H318 Acute Tox. 4, H302 Skin Irrit. 2 H315 Aquatic Chronic 3, H412

Full text of hazard symbols and R-phrases is mentioned in Section 16.

4. FIRST AID MEASURES

Generally:

In case of accident or if you are feeling unwell seek immediately medical advice (show the label or this sheet if possible).

Exposure symptoms:

Bleeding from the nose and gums, blood in urine and excrement, nausea, vomit, anorexia, abdominal pain, interior pain, interior bleeding, dormancy. After ingestion, symptoms may appear with a delay of a few days.

Antidote:

Vitamin K1 (phytomenadione).

Instructions for the doctor:

The product is high anticoagulant formulation, outgrowth of coumarin. Inhibit the metabolism of vitamin K and constrain the formulation of prothrombin.

In case of intoxication, give vitamin K1 intramuscular or orally in doses of 10-25 mg. the repetition of doses continues until the times of prothrombin come again to normal. Control of prothrombin is done every 3 hours in serious cases of intoxication and every 8-10 hours in less serious cases of intoxication. In serious occasions, the eventuality of blood decantation should be examined.

Ingestion:

If the patient is conscious, evoke immediately vomit with mechanic irritation in the back part of the pharynx with a blunt object or with the fingers. Afterwards give 1-2 glasses of fresh water (not saline). Do not give anything by mouth and do not induce vomit to an unconscious person. Seek immediately medical advice and show the formulation or the label.

Inhalation:

Due to the form of the formulation, no danger by inhalation. is expected.

Skin contact:

Remove the contaminated clothes. Wash immediately with soap and plenty of water. Ask for medical advice.

Eye contact:

Wash immediately with plenty of water for at least 15 minutes. Seek medical advice.

5. FIRE-FIGHTING MEASURES**Suitable extinguishing media:**

Dry powder, foam, carbon dioxide, water spray.

Unsuitable extinguishing media:

High pressure water spring.

Special exposure hazards:

During the combustion toxic or/and irritating gases may be released. Do not inhale the gases. During extinguishing do not stand con the wind direction.

Dangerous breakdown products include carbon and bromium oxide, hydrobromic acid.

Use water spray to cool containers and tanks nearby the fire.

Avoid the leak of water contaminated with the extinguishing media to sewers, soil and groundwater.

Protective equipment:

Wear self contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions:**

Wear suitable protective clothing (as described in Section 8). Avoid contact with eyes and skin.

Environmental precautions:

Avoid the pollution of soil, surface water and groundwater.

Methods for cleaning up:

Stop and contain the leak. Sweep or collect with a shovel the material and use it (big quantities) or dispose of it (small quantities). Use suitable liquid adsorbent material, such as sand, soil, sawdust so as to remove any residues. Collect the contaminated material and send it for disposal (as described in Section 13).

Wash out the contaminated area with water. Collect the formulations using adsorbent material and send for disposal.

7. HANDLING AND STORAGE**Handling:**

Avoid contact with eyes and skin. Wash your hands and the uncovered parts of the body before eating, drinking or smoking and after the handling. Use suitable protective equipment (as described in Section 8), and wash it well after every contact with the product.

Storing:

Keep in its original package, tightly closed, in a dry, cool and well-ventilated place, away from heat and inflammation sources and away from direct sunlight.

Keep it away from food, drink, feedstuffs, and cosmetics and away from children and domestic animals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Exposure limit values:**

Bromadiolone: Not determined

Professional use control:

Use the product in a place with sufficient ventilation.

In the working area there should be installation of fresh water supply so as to wash in case of contact with eyes and skin.

Personal protective equipment:

After the end of the work wash all the working clothes separately following the manufacturer's instructions. If there are no special instructions for the washable parts of the equipment, use detergent and hot water.

Respiratory protection:

Generally it is not required. In case of dust formulation, use a mask with filter suitable for particles.

Hand protection:

Gloves from nitrile. Gloves should be washed externally before their removal.

Eyes and face protection:

Generally it is not required. If eye contact is expected, wear safety glasses.

Skin protection:

Suitable protective outfit or long-sleeved blouse and long trousers, shoes, socks.

9. NATURAL AND CHEMICAL PROPERTIES

Appearance:	Blue grains
Odor:	Slight odor of cereals
pH:	Not applicable
Melting point:	Not applicable (a.i.)
Flash point:	200-210°C (a.i.)
Inflammation point:	Not determined
Inflammability:	Not flammable
Explosive properties:	Not explosive
Oxidizing properties:	Not oxidizing
Vapor pressure:	0.002 mPa (20°C) (δ.o.)
Specific gravity:	Not disposed
Solubility:	Water: 19 mg/lit (20°C) (a.i.) Dimethylformamide: 730 gr/lit (20°C) (a.i.) Ethyl acetate: 25 gr/lit (20°C) (a.i.) Ethanol: 8.2 gr/lit (20°C) (a.i.) Soluble in acetone. Slightly soluble in chloroform. Dissoluble in diethyl ether and hexane. (a.i.)
Partition coefficient n-octanol / water:	log K _{ow} = 4.28 (a.i.)

10. STABILITY AND REACTIVITY**Conditions to avoid:**

Stable under normal conditions.

Avoid heat and inflammation sources and exposure to direct sunlight.

Materials to avoid:

Strong acids and alkalis, strong oxidising factors.

Hazardous decomposition products:

During thermal decomposition carbon and bromium oxides, hydrobromic acid may be released.

11. TOXICOLOGICAL INFORMATION**Acute Oral toxicity:**

LD₅₀/rats: >22000 mg/kg

Acute Dermal toxicity:

LD₅₀/rabbits: >40000 mg/kg

Acute Inhalation toxicity:

LC₅₀: >10 mg/lit air/4-hr

Skin irritation:

Non-irritant to skin.

Eye irritation:

Non-irritant to eye.

Sensitization:

It doesn't cause sensitization.

(The values of the acute toxicity are becoming from calculations)

Other toxicological characteristics:**Bromadiolone:**

Chronic toxicity: In a 90 days study with rats and dogs, the unique observed symptom was the reduced rate of prothrombin formulation.

Reproduction: There is no data available.

Teratogenicity: After oral administration of bromadiolone dose up to 70 µg/kg body weight/day in female rats during days 6-15 of the pregnancy, maternal toxicity in the highest dose was observed. There is no data on foetotoxicity or teratogenicity in any dose level. The same absence of symptoms was mentioned in rabbits, that were given doses up to 8 µg/kg body weight/ day during days 6-18 of pregnancy, without observed maternal toxicity in the highest dose level.

Mutagenicity: Bromadiolone was not mutagenic in salmonella bioassays. It did not induce mutations to ovary cells of Chinese hamsters.

Carcinogenicity: It is not cancerous.

Organ toxicity: There are not disposal data.

Behavior in the body: The main road of excretion after ingestion is via feces. Accumulation is mainly observed in the liver. Elimination from the liver is accomplished in two phases, with one initial rapid phase of 2-8 days and a second, slow phase, with a period of 170 days half-life.

Denatonium benzoate:

Toxic in case of ingestion. Contact with skin causes itch and irritation. Irritates the eyes and the respiratory system. Exposure after inhalation may cause asthmatic reaction. Prolonged or repeated exposure may cause damage to target organs (lungs, mucosa). It is not registered as cancerous by OSHA, NTP and IARC.

Sodium benzoate:

Inhalation may cause irritation of the respiratory system, with symptoms such as cough and difficulty in breathing. Ingestion may cause irritation of the gastrointestinal system, with nausea, vomit, abdominal pain. Contact with the skin may cause flush and pain. Contact with eyes may cause irritation, flush and pain. Prolonged or repeated exposure may cause damage to target organs (blood, reproduction system, liver, central nervous system). It is not registered as cancerous from IARC.

12. ECOLOGICAL INFORMATION**Ecotoxicity:****Toxicity to fish and aquatic organisms:**

Rainbow trout	LC ₅₀ (96-hr) 1.4 mg/l (a.i.)
Daphnia magna	EC ₅₀ (48-hr) 2 mg/l (a.i.)
Algae	IC ₅₀ (72-hr) 1.63 mg/l (a.i.)

Toxicity to birds:

Quail	LD ₅₀ (acute oral) 1600 mg/kg (a.i.)
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Resistance and degradation capacity/Mobility:

Degradation in soil and ground water: The bromadiolone is rapidly absorbing in soil rich in clay and organic joins. It doesn't filter and it doesn't show mobility in the soil. Soil decomposition is important. Half-life time period for aerobic decomposition is 53 days and for anaerobic is 60 days.

Decomposition in water: Bromadiolone is hardly soluble in water. It doesn't show any risk of water pollution.

Bioaccumulation capacity:

Bromadiolone shows medium probability of bioaccumulation.

K_{ow} (experimental) = 19000 (a.i.)

BCF (estimated) = 867 (fish) (a.i.)

13. DISPOSAL CONSIDERATIONS

Disposal of remaining quantity or contaminated product should be done in accordance with local and national legislation.

Unused material:

Do not throw the product to sewers, surface water and ground water. Disposal of remaining material could be done with incineration by licensed disposal units.

Packaging materials:

Do not reuse empty packing materials. Collect them for disposal according to the instructions for non-used material.

14. TRANSPORT INFORMATION

No subject to transport regulations (ADR, IMDG, RID, ICAO/IATA).

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Class	--
Packing group	--
Description	--

15. REGULATORY INFORMATION

Classification according to Directive 1999/45/EC.

Hazard symbols:

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R-phrases:

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S-phrases:

S1/2	Keep locked up and out of the reach of children.
S13	Keep away from food, drinks and animal foodstuffs.
S20/21	When using, do not eat, drink or smoke.
S35	This material and its container must be disposed of in a safe way.
S37	Wear suitable gloves.
S45	In case of accident or if you are feeling unwell, seek medical advice immediately (show the label whenever possible).
S46	In case of ingestion, seek medical advice immediately and show this container or label.

Special features:

Do not apply near aquatic areas.

To avoid human and environment risks follow the instructions.

There is no available evaluation for chemical safety for substances inside the preparation.

16. OTHER INFORMATION

Full text of hazard symbols and R-phrases if mentioned, which mentioned in Section 2 & 3.

T+	Very toxic.
T	Toxic.
Xi	Irritating.
N	Dangerous for the environment.
R25	Toxic if swallowed.
R26	Very toxic by inhalation.
R27	Very toxic in contact with skin.
R28	Very toxic if swallowed.
R36	Irritating to eyes.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R51	Toxic to aquatic organisms.
R53	May cause long-term adverse effects in the environment.

The information contained here in is based on the present state of our knowledge and is refers only to our product. No responsibility is taken over in case of misuse of the product. For further information, show the label of the product.

End of the Material Safety Data Sheet