SAFETY DATA SHEET
MURIBROM BLOCK / BROMADIOLONE 0.005% Wax Block

Issue date: 14.11.2013 (v13.3)

1. – IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier:
Trade name: MURIBROM BLOCK
Chemical name: Bromadiolone 0.005 % w/w Wax Block
Registration number: ES/AA-2014-14-00206

1.2 Relevant identified uses of the substance or mixture and uses advised against
Formulated bait to control rodent infestation

1.3 Details of the supplier of the safety data sheet
Manufacturer: QUIMICA DE MUNGUIA S.A.
Derio Bidea 51
48100 MUNGUIA - SPAIN
Tel: 946741085Fax:946744829.
e-mail: j.calzada@quimunsa.com

1.4 Emergency telephone number:
Toxicology National Institute (Spain): + 34 91 562 04 20

2.- HAZARDS IDENTIFICATION
Anticoagulant product derived from coumarin that inhibits vitamin K metabolism and blocks prothrombin formation.

2.1 Classification of the substance or mixture
Regulation (EC) nº 1272/2008 [UE-GHS/CLP]: Classification
Not classified

Not classified
Harmful effects will be described in 9 and 12 sections.

2.2 Label elements
Labeling according to Regulation (EC) nº 1272/2008 [UE-GHS/CLP]
Hazard pictograms: N.A.
Warning word(s): N.A.
Hazard statements: N.A.
Precautionary statements:
P102 Keep out of reach of children.
P103 Read label before use.
P280 Wear protective gloves and protective clothing
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Labeling according to Directive UE 67/584/CE and Directive 1999/45/CE
Hazard pictograms: N.A.
Symbols: N.A.
Indications of danger: N.A.
Risk Phrases: N.A.
Safety Phrases:
S2 Keep out of the reach of children
S13 Keep away from food, drink and animal foodstuffs
S37 Wear suitable gloves
**SAFETY DATA SHEET**

**MURIBROM BLOCK / BROMADIOLONE 0.005% Wax Block**

Issue date: 14.11.2013 (v13.3)

### 2.3 Other hazards

None

### 3.- COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance:</th>
<th>Bromadiolone</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUPAC Name:</td>
<td>3-{3-(4’-bromobiphenyl-4-yl)-3-hydroxy-1-phenylpropyl-4-hydroxycoumarin}</td>
</tr>
<tr>
<td>No. CAS</td>
<td>28772-56-7</td>
</tr>
<tr>
<td>No. CE</td>
<td>249-205-9</td>
</tr>
<tr>
<td>Clas. 67/548/CE</td>
<td>T+; N R26/27/28; R48/23/24/25; R50-53; R61</td>
</tr>
<tr>
<td>Concentration</td>
<td>0.005 % ± 10 %</td>
</tr>
<tr>
<td>Classification CLP</td>
<td>Acute Tox.: 1; H300, H310, H330</td>
</tr>
<tr>
<td></td>
<td>Tox. Reproduction: 1A; H360D</td>
</tr>
<tr>
<td></td>
<td>STOT RE 1; H372</td>
</tr>
<tr>
<td></td>
<td>Acute Aquatic: 1; H400</td>
</tr>
<tr>
<td></td>
<td>Chronic Aquatic: 1; H410</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance:</th>
<th>Denatonium benzoate</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUPAC Name:</td>
<td>N,N-Diethyl-N-[(2,6-dimethylphenylcarbamoyl)-methyl]-benzylammonium benzoate</td>
</tr>
<tr>
<td>No. CAS</td>
<td>3734-33-6</td>
</tr>
<tr>
<td>No. CE</td>
<td>223-095-2</td>
</tr>
<tr>
<td>Clas. 67/548/CE</td>
<td>Xn, XR20/22, R41, R38, R52/53</td>
</tr>
<tr>
<td>Concentration</td>
<td>0.002 % ± 10 %</td>
</tr>
<tr>
<td>Classification CLP</td>
<td>Acute Tox., Oral: cat. 4; H301, Dermal Irrit. cat. 2; H315</td>
</tr>
<tr>
<td></td>
<td>Eyes Irrit.: cat 2; H319</td>
</tr>
<tr>
<td></td>
<td>STOT RE: cat. 3; H335</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance:</th>
<th>Propienglycol</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUPAC Name:</td>
<td>1,3-propanediol</td>
</tr>
<tr>
<td>No. CAS</td>
<td>57-55-6</td>
</tr>
<tr>
<td>No. CE</td>
<td>200-338-0</td>
</tr>
<tr>
<td>Clas. 67/548/CE</td>
<td>N.A.</td>
</tr>
<tr>
<td>Concentration</td>
<td>2.00 %</td>
</tr>
<tr>
<td>Classification CLP</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

**Othersubstances:**

<table>
<thead>
<tr>
<th>No. CAS</th>
<th>No. CE</th>
<th>No. Índice</th>
<th>Classification CLP</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not classified</td>
<td>Up to 100%</td>
</tr>
</tbody>
</table>

### 4.- FIRSTS AID MEASURES

**4.1. Description of first aid measures**

**General recomendations:**

Exposition

Remove the affected person/s from the contaminated zone and seek medical advice.

*After skin contact:* Wash the affected areas with plenty of water and soap. Take off the contaminated clothes.

*After eye contact:* Flush eyes with plenty of water for several minutes. Seek medical attention.

*After ingestion:* Wash out mouth with water. If swallowed, DO NOT induces vomiting. Maintain body temperature; breath control. Seek immediate medical attention and show the label an safety sheet.

*After inhalation:* Bring person to open air.

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

Substance is an anticoagulant and the risk is a potential internal haemorrhage.
4.3. Indication of any immediate medical attention and special treatment needed

As a rule, symptomatic treatment for compensating the observed effects.
Stomach-wash if haemorrhage symptoms are not observed.
In the event of haemorrhages, inject vitamin K1, control coagulation time, and if necessary give fresh blood transfer.

Antidote: Vitamin K1 (Konakion ®).

5. - FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Dry chemical, foam and CO₂ are to be used.
Avoid the use of water jets. Water can be used to refresh contiguous zones, objects, recipients and containers exposed to heat.

5.2. Special hazards arising from the substance or mixture

Toxic smoke and fumes can form due to the combustion or exposure to heat.

5.3. Advice for fire-fighters

Wear usual fire protection and self contained breathing equipment.
AVOID INHALATION OF FUMES AND SMOKE.
FIRES PRODUCED IN CONFINED SPACES SHOULD BE DEALT WITH BY QUALIFIED PERSONEL WEARING CERTIFIED BREATHING EQUIPMENT.

6. - ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Do not inhale the powder that could be generated.
Stay upwind from the spillage.
Be protected adequately using aprons, gloves, eye protection and dust filter mask. (See section 8).

6.2. Environmental precautions

Avoid that the product reaches drains, water drains, and penetrates in the soil.
In the case of spillage in water, use adequate barrier devices to avoid the dispersion of the product.
Contact the competent authorities if situation cannot be controlled.

6.3. Methods and material for containment and cleaning up

Contain the spilled product. Avoid spillage of the product into drains or riverbeds, in order to minimize the risk of pollution.
Collect the spillage with a spade and deposit it in a secure and closed container, mentioning the relative risks of the product and deliver it to a company duly authorized for its destruction. Incineration is the recommended treatment.

6.4. Reference to other sections

See sections 8 and 13.

7. - HANDLING AND STORAGE

7.1. Precautions for safe handling

Insure correct ventilation. Avoid inhaling the smoke, vapours or dust generated during handling.
Avoid extended or frequent contact of the product with the skin. Use special protective gloves for chemical products.
SAFETY DATA SHEET
MURIBROM BLOCK / BROMADIOLONE 0.005% Wax Block

(nitrile). Wash the gloves with plenty water and soap after handling. Wash hands after each utilization. Moisturizing creams after washing hands can avoid skin dryness and chapping. Avoid contact with the eyes. In the event of risk, use adequate ocular protection. Personal hygiene after work.

7.2. Conditions for safe storage, including any incompatibilities
Store in fresh and dry place. Keep away from sources of ignition and heat. Keep locked up and out of the reach of children and domestic animals. Keep away from foods and drinks. Keep in its original packing. Packing material to avoid: None.

7.3. Specific end use(s)
Formulated bait to control rodent infestation

8. - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters
AOEL sub chronic / chronic: 0.0012 µg/kg bw /day (*)
AOEL acute: 0.0023 µg/kg bw /day (*)
(*) Referred to active ingredient Bromadiolone

8.2. Exposure controls
Technical controls:
Handle with appropriate hygiene precautions and follow the instructions. Wash hands during breaks and at the end of workday.
Personal protection:
- Respiratory protection: Respiratory protection equipment is not necessary when the concentration of dust, vapour and smokes is maintained at a correct level, but it is recommended.
- The use of respiratory equipment must be done according to the instructions of the manufacturer and to the regulation and rules for its utilization.
- Filter P2 (for solid and liquid particles, DIN 3181).
- Hand protection: Use gloves to prevent skin contact.
- Eye protection: Use safety goggles or face shield when eye contact can occur.
- Skin protection: Use wear-once-only clothes and eliminate them when contaminated. Dry wash and starch are recommended.
- Industrial hygiene: Eye fountain and washing facilities in the working area. Personal hygiene after work.

9. - PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties
a - Appearance: Red Wax Blocks
b - Odour: Aromatic
c - Odour threshold: N.A.
d - pH: N.A.
e - Melting point: N.A.
f - Initial boiling point and boiling range: N.A.
g - Flash point: N.A.
h - Evaporation rate: N.A.
i - Flammability (solid, gas): N.A.
### SAFETY DATA SHEET
**MURIBROM BLOCK / BROMADIOLONE 0.005% Wax Block**

**Issue date:** 14.11.2013 (v13.3)  
**Page:** 5 of 8

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>j</td>
<td>Upper/lower flammability or explosive limits; N.A.</td>
</tr>
<tr>
<td>k</td>
<td>Vapour pressure; N.A.</td>
</tr>
<tr>
<td>l</td>
<td>Vapour density; N.A.</td>
</tr>
<tr>
<td>m</td>
<td>Relative density; N.A.</td>
</tr>
<tr>
<td>n</td>
<td>Solubility(ies) at 20 º C.; N.A.</td>
</tr>
<tr>
<td>o</td>
<td>Partition coefficient: n-octanol/water; Log P 4.10 at pH 7 (*)</td>
</tr>
<tr>
<td>p</td>
<td>Auto-ignition temperature; N.A.</td>
</tr>
<tr>
<td>q</td>
<td>Decomposition temperature; N.A.</td>
</tr>
<tr>
<td>r</td>
<td>Viscosity; N.A.</td>
</tr>
<tr>
<td>s</td>
<td>Explosive properties; Not explosive</td>
</tr>
<tr>
<td>t</td>
<td>Oxidising properties. Not highly oxidizing</td>
</tr>
</tbody>
</table>

(*) Referred to active ingredient Bromadiolone

**9.2. Other information**

None

**10. - STABILITY AND REACTIVITY**

**10.1 Reactivity**  
None

**10.2 Chemical stability**

Stable at normal conditions

**10.3 Possibility of hazardous reactions**

None

**10.4 Conditions to avoid**

Exposure to high temperatures

**10.5 Incompatible materials**

Strong oxidant agents

**10.6 Hazardous decomposition products**

Thermal decomposition can generate toxic compounds
11.- TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

a - Acute toxicity:

- Oral:
  - Rat: Oral LD$_{50}$ 1.125 mg/kg (*)
  - Rabbit: Oral LD$_{50}$ 1.0 mg/kg (*)
  - Dog: Oral LD$_{50}$ 8.1 mg/kg (*)
  - Cat: Oral LD$_{50}$ 25.0 mg/kg (*)
  - Dermal: Rabbit Dermal LD$_{50}$ 1.71 mg/kg (*)
- Inhalation: Rats Inhalation LC$_{50}$ 0.43 µg/L (males and females combined) (*)

( *) Referred to active ingredient Bromadiolone

b - Skin corrosion/irritation; Not irritant

c - Serious eye damage/irritation; Not irritant

d - Respiratory or skin sensitisation; Not sensitizer (Buehler test)

e - Germ cell mutagenicity; N.A.

f - Carcinogenicity; N.A.

g - Reproductive toxicity; N.A.

h - STOT-single exposure; N.A.

i - STOT-repeated exposure; N.A.

j - Aspiration hazard. N.A.

12- ECOLOGICAL INFORMATION

12.1. Toxicity

Aquatic toxicity:

- Oncorhynchus mykiss LC$_{50}$ 2.86 mg/L (96 h.) (*)
- Daphnia magna EC$_{50}$ 5.79 mg/L (48 h.) (*)
- Rainbow trout: LC$_{50}$ 1.4 mg/L (96 h.) (*)
- Pseudokirchneriella subcapitata EC$_{50}$ 1.14 mg/L (72 h.) (*)
- Activated sludge EC$_{50}$ 132.8 mg/L (extrapolated) (3 h.) (*)

Effects on earthworms or other soil non-target organisms

- Eisenia fetida LC$_{50}$ 918 mg/L wet soil - 13 days (*)

Birds toxicity:

- Japanese quail LD$_{50}$ 134 mg/Kg. (*)
- Bobwhite quail) LD$_{50}$ 138 mg/Kg. (*)

( *) Referred to active ingredient Bromadiolone

12.2. Persistence and degradability

Degradation in soil is slow.

- Aerobic degradation: half life = 53 days
- Anaerobic degradation: half life = 60 days

12.3. Bioaccumulative potential

N.A.

12.4. Mobility in soil

N.A.
SAFETY DATA SHEET
MURIBROM BLOCK / BROMADIOLONE 0.005% Wax Block

Issue date: 14.11.2013 (v13.3)

12.5. Results of PBT and vPvB assessment
Considered as PBT substance.

12.6. Other adverse effects
N.A.

13 - DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Product:
In the EEC there is not a consensus on the regulation for the elimination of chemical residues. Their elimination is regulated by local laws and arrangements. We request contact with the competent authority so as to be informed about each particular case.

Containers:
Their elimination must be accomplished according to the local official arrangements. The same measures should be adopted for the contaminated containers as for the product.

Incineration is the preferred method.

14.- TRANSPORT INFORMATION

14.1. UN number
Not Classified

14.2. UN proper shipping name
Coumarin derivative pesticide, liquid, toxic.

14.3. Transport hazard class(es)
Rail and road transport ADR/RID: Not Classified
Sea shipment: Not Classified
Air shipment: Not Classified

14.4. Packing group
Rail and road transport ADR/RID: Not Classified
Sea shipment: Not Classified
Air shipment: Not Classified

14.5. Environmental hazards
Rail and road transport ADR/RID: None
Sea shipment: None

14.6. Special precautions for user
N.A.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
N.A.
SAFETY DATA SHEET
MURIBROM BLOCK / BROMADIOLONE 0.005% Wax Block

Issue date: 14.11.2013 (v13.3)

15.- REGULATORY INFORMATION.

MSDS was done according to:
- Regulation EC Nº 1907/2006 (Reach), and
- Regulation EC Nº 453/2010

Classification and labelling according to:
- Directive 67/548/CE (Classification, bulking and labelling of the dangerous substances) and next modified.
- Directive 1999/45/CE
- Regulation EC Nº1272/2008 (CLP) and modifications

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

- Directive 98/8/CE (Biocides)
- Regulation (EU) 528/2012
- Sanco /10203/2011 rev 4
- CAR Bromadiolone

15.2. Chemical safety assessment

Not available

16. - OTHER INFORMATION

Track Changes:
- Modification Classification and labelling in agreement to Assessment Report of Bromadiolone
- Modified paragraphs 2, 3, 14 and 15, minor corrections other sections.
- Modification according to the biocidal product authorisations (RMS: Spain), November 2013.

Abbreviations
- N.A. – Not available
- PG – Packing Group / Grupoembalaje
- PI – PackingInstructions / Instrucciones de embalaje
- SP – SpecialProvisions / Disposiciones Especiales

The data supplied on this safety data sheet is based on our current knowledge and on the current ECC regulations, and describes only the safety measures in the managing of the product. No warranty, express or implied is made.