Section 1 - Identification of The Material and Supplier

Ensystex (Singapore) Pte. Ltd.
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Chemical nature: Brodifacoum (anticoagulant) in a suitable food-based carrier.

Trade Name(s): **RODENTHOR® Rodenticides**

This SDS is intended for RODENTHOR® Soft Bait, RODENTHOR® Block Rodenticide & RODENTHOR Gel Rodenticide.

Product Code: RODENTHOR Soft Bait: Singapore Approval: SINNEAR-PstRB/122/0738
RODENTHOR Block Bait: Singapore Approval: SINNEAR-WaxRB/122/0739

Product Use: Rodenticides for use as described on the product labels.

Creation Date: **June 2014**

This version issued: **January 2025**, and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature
This product is classified as: Not classified as hazardous according to the criteria of SWA.
Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

SUSMP Classification: S6
ADG Classification: None allocated. Not a Dangerous Good according to Australian Dangerous Goods (ADG) Code, IATA or IMSBC criteria.
UN Number: None allocated
GHS Classification: Specific target organ toxicity (Repeated exposure): Category 2

GHS Signal word: WARNING

HAZARD STATEMENT:
H373: May cause damage to organs through prolonged or repeated exposure.

PREVENTION
P102: Keep out of reach of children.
P260: Do not breathe dusts.

RESPONSE
P314: Get medical advice or attention if you feel unwell.

STORAGE

DISPOSAL
P501: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.

Emergency Overview

Physical Description & colour: Solid extruded 10 g or 15 g blue wax block or; 10 g or 15 g tea bag with blue paste.
Odour: Mild characteristic odour.
Major Health Hazards: Ingestion of brodifacoum is initially asymptomatic and may continue as such even with prolonged alterations in prothrombin time. No gastrointestinal tract or other symptomatology occurs. Coagulation disturbances may become evident a few days after ingestion and may be detected only by laboratory studies. In severe poisoning, gum-bleeding, epistaxis, petechiae, ecchymoses, haematomata, blood in urine and faeces, and genital haemorrhage may occur. Internal bleeding and cerebral haemorrhage may complicate the patient's prognosis. Danger of cumulative effects.

Potential Health Effects

Symptoms and Effects No adverse health effects are expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may occur if the product is mishandled are:

- **Mild Exposure:** Reduction in the clotting ability of the blood, detectable only by medical analysis.
- **Moderate Exposure:** Bleeding from gums, tendency to bruise easily, blood present in faeces and/or urine, excessive bleeding from minor cuts.
- **Severe Exposure:** Severe intestinal bleeding and/or internal bleeding resulting in shock, coma and even death in very severe cases.

Inhalation:

Short term exposure: Available data indicates product is not harmful. Product is unlikely to cause any discomfort or irritation.
Long Term exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short term exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. However, product may be mildly irritating but is unlikely to cause anything more than mild discomfort which should disappear once contact ceases.
Long Term exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short term exposure: This product may be mildly irritating to eyes but is unlikely to cause anything more than mild discomfort which should disappear once product is removed.
Long Term exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short term exposure: Significant oral exposure is considered to be unlikely. The denatonium benzoate in the product makes it very unpalatable to humans. However, this product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.
Long Term exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: No significant ingredient is classified as carcinogenic by IARC.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m^3)	STEL (mg/m^3)
Brodifacoum	56073-10-0	0.005 (0.05g/kg)	not set	not set
Denatonium benzoate	3734-33-6	0.001	not set	not set
Natural food ingredients	various	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly.

This product DOES NOT contain peanuts.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak "is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned, or irritated by this product. Have this SDS with you when you call.

Vitamin K1 (Phytomenadione) is antidotal.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact: Gently brush away excess particles. If on skin and after each baiting, wash thoroughly with soap and water. Wash hands after use.

Eye Contact: Quickly and gently brush particles from eyes. No effects expected. If irritation does occur, flush contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the product is removed. Obtain medical advice if irritation becomes painful or lasts more than a few minutes. Take special care if exposed person is wearing contact lenses.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre or call a doctor.

DOMESTIC ANIMALS: Immediately transport to a veterinary surgeon. If no signs of intoxication are noted, but bait consumption is suspected, induce vomiting only if ingestion is recent, less than six (6) hours. Use a solution of salty water (2-3 tablespoons salt in a cup of water), place in a soft drink bottle and squirt it down the animal's throat. Vomiting should take place after about 10 minutes. Seek veterinary advice.

Advice to Doctor: Brodifacoum, the active constituent of RODENTHOR Rodenticides, is a long-lasting anticoagulant chemical which if ingested by humans, domestic animals, or pets, can reduce the clotting power of the blood and haemorrhage may result. Vitamin K1 (Phytomenadione) should be administered urgently by medical, appropriate para-medical personnel or veterinarians. If administered intravenously the injection must be given slowly.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.
Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Not combustible. Use extinguishing media suited to burning materials.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade.

Flash point:	No data
Upper Flammability Limit:	No data.
Lower Flammability Limit:	No data.
Autoignition temperature:	No data.
Flammability Class:	No data.

Section 6 - Accidental Release Measures

Accidental release: This product is sold in small packages, and the accidental release from one of these is not usually a cause for concern. For minor spills, clean up, rinsing to sewer and put empty container in garbage. Although no special protective clothing is normally necessary because of occasional minor contact with this product, it is good practice to wear impermeable gloves when handling chemical products. In the event of a major spill, prevent spillage from entering drains or water courses and call emergency services.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport, and storage of this schedule of poison. Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:
Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits **TWA (mg/m^3)** **STEL (mg/m^3)**

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for brodifacoum is set at 0.0000005 mg/kg/day. The corresponding NOEL is set at 0.001 mg/kg/day.

The ADI for Denatonium benzoate is set at 0.0005 mg/kg/day. The corresponding NOEL is set at 0.5 mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2013.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation: This product should be used in a well-ventilated area.

Eye Protection: Eye protection is not normally necessary when this product is being used. However, if in doubt, wear suitable protective glasses or goggles.

Skin Protection: The information at hand indicates that this product is not harmful and that normally no special skin protection is necessary. However, we suggest that you routinely avoid contact with all chemical products and that you wear suitable gloves (preferably elbow-length) when skin contact is likely.

Protective Material Types: We suggest that protective clothing be made from the following materials: cotton, rubber, PVC.

Respirator: If there is a significant chance that dusts are likely to build up in the area where this product is being used, we recommend that you use a suitable Dust Mask.

Section 9 - Physical and Chemical Properties

Physical Description & colour:	Solid extruded 10 g or 15 g blue wax block, or; 10 g or 15 g tea bag with blue paste.
Odour:	Mild characteristic odour.
Boiling Point:	Not available.
Freezing/Melting Point:	No specific data. Paste or block at normal temperatures.
Volatiles:	No specific data. Expected to be low at 100 °C.
Vapour Pressure:	Negligible at normal ambient temperatures.
Vapour Density:	Not applicable.
Specific Gravity:	No data.
Water Solubility:	Insoluble.
pH:	No data.
Volatility:	Negligible at normal ambient temperatures.
Odour Threshold:	No data.
Evaporation Rate:	Not applicable.
Coeff Oil/water distribution:	No data
Viscosity:	Not applicable.
Autoignition temp:	No data.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf-life properties.

Conditions to Avoid: Protect this product from light. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.

Incompatibilities: strong acids, strong bases, strong oxidising agents.

Fire Decomposition: Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. Bromine compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Toxicity: Brodifacoum is a bromylated hydroxycoumarin derivative; an indirect anti-coagulant; and an effective stomach poison which inhibits prothrombin formation and induces capillary damage. To be effective it usually requires only a single ingestion of a bait formation in one feeding to produce a kill. It is extremely toxic to a broad spectrum of rodents and other small mammals but due to its low bait concentration and its delayed effect, it is considered to be only of low acute toxicity hazard to humans. Brodifacoum acts through the interruption of the vitamin K1-epoxide cycle, preventing vitamin K activation rather than depleting its body reserves.
The anticoagulant effect of brodifacoum may last for more than 7 weeks in the poisoned patient.
Ingestion of brodifacoum is initially asymptomatic and may continue as such even with prolonged alterations in prothrombin time. No gastrointestinal tract or other symptomatology occurs. Coagulation disturbances may become evident a few days after ingestion and may be detected only by laboratory studies. In severe poisoning, gum-bleeding, epistaxis, petechiae, ecchymoses, haematomata, blood in urine and faeces, and genital haemorrhage may occur. Internal bleeding and cerebral haemorrhage may complicate the patient's prognosis.
The course of poisoning is characteristically long. Alterations of coagulation parameters and clinical symptoms of bleeding may be maintained for several days if no treatment is provided. The prognosis is poor in cases with internal bleeding or intracerebral haemorrhage, and also in patients with previous haematological illnesses or renal insufficiency. Death, however, is uncommon.

Toxicity of brodifacoum:

Acute oral, rat: LD_{50} 0.49 mg/kg
Acute dermal, rat: LD_{50} 4.1 mg/kg
Acute inhalation, rat: LC_{50} 3.96 µg/L/4 hrs

Classification of Hazardous Ingredients

Ingredient	Risk Phrases

No ingredient mentioned in the HSIS Database is present in this product at hazardous concentrations.

Section 12 - Ecological Information

Brodifacoum does not enter the atmosphere, because of its low volatility. It is practically insoluble in water. Brodifacoum is strongly bound on soil particles and is not taken up by plants. The rate of degradation is relatively slow and depends on soil type. Residues in crops have never been detected in field studies.
Brodifacoum is not intended for direct application to growing crops or for use as a food additive. No information is available on concentrations in air, water, and soil. Residues of brodifacoum were detected in dead barn owls in the United Kingdom at levels of 0.019-0.515 mg/kg. Brodifacoum residues were also found in the liver, muscle, and fatty tissues of rabbits intentionally poisoned during field trials with baits containing 0.005% active ingredient, at concentrations of 4.4, 0.26, and 0.86 mg/kg, respectively.
The solubility of brodifacoum in water is low and, in bait formulation, its use is unlikely to be a source of water pollution. As a technical material, it is highly toxic for fish. Brodifacoum appears to bind rapidly in the soil with very slow desorption and without leaching.
Non-target organisms are potentially at risk in two ways: from direct consumption of baits (primary hazard) and through eating poisoned rodents (secondary hazard).
Bird species vary in their susceptibility to brodifacoum. The main reason for the poisoning of domestic animals is direct consumption of brodifacoum baits. Brodifacoum shows a similar range of acute toxicity for non-target and target mammals. The primary hazard is usually expressed by the amount of finished bait that must be consumed to approach the lethal dose. Some secondary toxicity laboratory studies on wildlife have shown that captive predators could be intoxicated by the no-choice feeding of brodifacoum-poisoned or dosed prey. The significance of these results in terms of hazard under field conditions is difficult to assess because the predators would not be expected to eat only poisoned animals. However, predators may take poisoned, but not dead, small mammals preferentially. In areas close to baiting, poisoned rodents may represent a high proportion of the diet for individual birds. However, only few individuals will be affected, unless there has been very widespread and constant use of the baits.

Section 13 - Disposal Considerations

Disposal: Dispose of small quantities and empty containers by wrapping with paper and putting in garbage. For larger quantities, if recycling or reclaiming is not possible, use a commercial waste disposal service.
Dispose of carcasses safely by burning or burying in an approved landfill.

Section 14 - Transport Information

ADG Code: This product is not classified as a Dangerous Good by ADG, IATA or IMSBC criteria.
No special transport conditions are necessary unless required by other regulations.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredients: Brodifacoum, Denatonium benzoate, are mentioned in the SUSMP.

Section 16 - Other Information

This SDS contains only safety-related information. For other data see product literature.

If there is any conflict between this SDS and the registered label, instructions on the label prevail.

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

Please read all labels carefully before using product.