

Selontra®

The *smart* choice in rodenticides.

- ✔ Reliable, fast and effective
- ✔ Highly palatable, containing cholecalciferol
- ✔ Minimises non-target and secondary poisoning to birds
- ✔ Lowers risk of contamination and residues

Get rid of unwanted visitors.



 **BASF**

We create chemistry

Distributed by.

 **COOPERS**
environmental science

info@coopers.co.za

011 979 4246

 **GRIFFON**
POISON INFORMATION CENTRE

 **ASK
FOR IT BY
NAME**

CONTENTS

This technical brochure provides general information about Selontra® Rodent Bait, based on the active substance cholecalciferol, developed and marketed by BASF.

BASF emphasizes that **Selontra®** must be used in accordance with local regulations. The laws of each country govern the use of **Selontra®**. Please refer to the approved product label for further information.

- 1 **Introduction**
- 2 **Physical and Chemical Properties**
- 3 **Biological Profile**
- 3 **Rodents Controlled by Selontra®**
- 4 **Formulation and Use**
- 5 **Resistance Management**
- 6 **Toxicological Profile**
- 7 **Environmental Profile**
- 8 **Safety, Stewardship and First Aid Measures**



Selontra®

Rodent Bait

Selontra® Rodent Bait effectively controls rats and mice, such as brown rats, black rats, and house mice, including those that are resistant to anticoagulant rodenticides. **Selontra®** will be used by pest management professionals and non-professionals alike in urban and rural settings to control rodents which cause millions of rands in damage and spread life-threatening diseases every year. In urban settings, **Selontra®** can reduce the contamination of food and structural damage caused by rodents. In rural areas, **Selontra®** can help protect stored grain and livestock, farm equipment and buildings.

Cholecalciferol, the active ingredient in **Selontra®** rodent bait, belongs to the sterol class of chemistry and has a novel mode of action. It is a natural compound found in all animals.

Selontra® offers several important advantages from anticoagulant rodenticides, which are a class of chemicals that work to prevent the coagulation (clotting) of blood. The mode of action of cholecalciferol causes rodents to stop feeding after approximately 24 hours, which allows for a shorter baiting regime and faster control. The unique formulation of **Selontra®** is highly palatable to rodents, even in the presence of attractive food sources. In addition, studies show cholecalciferol has a favorable toxicological profile with low toxicity to most mammals and avian species, but with rodents showing a particular sensitivity.

No known resistance to cholecalciferol has been found in rodents, and the development of resistance is considered highly unlikely since it is an essential vitamin that controls physiological processes within animals.

Key Features and Benefits:

- Lower risk of primary and secondary non-target poisoning
- No known resistance, and development of resistance considered highly unlikely
- Shorter baiting regimes and quicker rodent control compared to anticoagulant baits
- Highly palatable even when other attractive food sources are available
- Suitable for burrow baiting
- Durable in all control situations and stable under extreme temperatures



Right: Selontra® will be used in both urban and rural settings to reduce the contamination of food caused by rodents and help protect livestock and stored grain from rodent infestations.

Selontra®

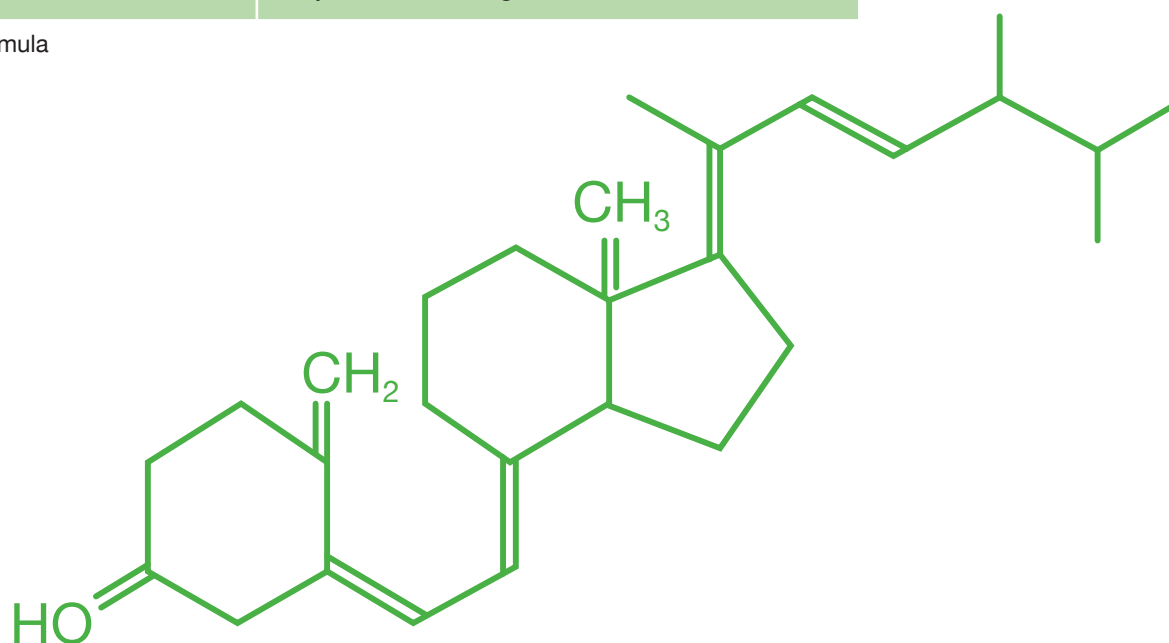
Rodent Bait



Physical and chemical properties

BSI Common Name (ISO)	Cholecalciferol
CAS Number	67-97-0
Chemical Name (IUPAC):	(5Z,7E)-9,10-secocholesta-5,7,10(19)-trien-3β-ol
Molecular Formula	C ₂₇ H ₄₄ O
Molecular Weight	384.7
Melting Point	72.5 to 83 °C
Bulk Density	1.02
Vapour Pressure	4 x 10 ⁻⁵ Pa at 20 °C
Henry's Law Constant	33.77 Pa m ³ /mole
Appearance	Solid white powder, no odour
Partition Coefficient	LOG P _{ow} > 5.9 at 20 °C (mean pH = 6.9)
Solubility in Water	< 0.5µg/l at 20 °C at pH 7.0
Solubility in Organic Solvents	n-Heptane: > 250 g/l Xylene: > 250 g/l 1,2-dichloroethane: > 250 g/l Methanol: > 250 g/l Acetone: > 250 g/l Ethyl acetate: > 250 g/l

Structural Formula



Selontra®

Rodent Bait



Biological Profile

Mode of Action

Cholecalciferol is a natural compound found in all animals. It is synthesized in animal skin by the action of sunlight. Natural dietary sources of cholecalciferol include fish, liver, fish oils, egg yolk, and milk fat. However, all compounds, even natural ones, will cause toxicity and death if the dose is high enough.

In order to gain biological and toxicological activity (externally acquired) cholecalciferol must undergo two reactions in the body for activation. At toxic doses, the active metabolites cause disruption of calcium homeostasis by increasing calcium absorption from the small intestine and mobilization of calcium stores from bones into the bloodstream, as well as decreased calcium excretion by the kidneys. The net result is dangerously high concentrations of blood calcium (hypercalcemia) and tissue calcification. After ingestion of a lethal dose, the free calcium levels are raised sufficiently that blood vessels and soft tissues, such as the heart, kidneys, liver, stomach and lungs are calcified, i.e. the formation of crystals of calcium salts in the tissues. This calcification causes disruption of normal metabolic processes leading to death.

Cholecalciferol at toxic doses has a stop-feeding action after about 24 hours, and animals that ingest a lethal dose of cholecalciferol bait usually die within two to seven days.

Selectivity

Selontra® has been shown to effectively control rats and mice such as *R. norvegicus*, *R. rattus*, *M. musculus/domesticus*, including strains resistant to anticoagulant rodenticides. Compared to most other rodenticides, including anticoagulants and bromethalin, **Selontra®** is less toxic to non-target birds and mammals.

Rodents Controlled by Selontra®

The following table illustrates the key target rodents controlled by **Selontra®**.

Scientific Name	EPPO Code	Common Name
<i>Mus musculus/ domesticus</i>	MUSXMU	House mouse
<i>Rattus norvegicus</i>	RATTNO	Brown/Norway rat
<i>Rattus rattus</i>	RATTRA	Black rat



Right: **Selontra®** quickly and effectively controls key target rodents including the house mouse, Norway rat and black rat.

Selontra®

Rodent Bait



Formulation and use

Selontra® is a high-performance ready-to-use securable soft bait formulation for professional and non-professional use. The product contains 0.75 g/kg (0.075% w/w) cholecalciferol based on an innovative formulation offering quick and effective control of rodent pests such as mice (*Mus musculus/ domesticus*), brown rats (*Rattus norvegicus*) and black rats (*Rattus rattus*), including strains resistant to anticoagulants and other difficult to control rodents.

Selontra® causes rodents to lose their appetite after eating, which means they will not return to the bait to feed. This allows other less dominant rodents quicker access to feed on the bait. As a result, there are more rodent kills per bait station, thus obtaining the most economical use of bait. Individual rodents can be controlled within three days after they start feeding and complete control of infestations can be achieved within seven days after rodents start feeding. Infestation control with only two bait applications is possible.

Typical Directions for Use

Species	Situation	Species Situation Application rate for each bait point
Mice	Domestic, commercial, agricultural	Up to 40 g (1 or 2 units) every 1-2 metres
Rats	Domestic, commercial, agricultural	Up to 140 g (5 to 7 units) every 5-10 metres

Place **Selontra®** at covered bait points, in burrows or in bait boxes throughout the infested area. Use the higher bait point density and the maximum number of bait units wherever rats or mice have been seen. Be aware of under-baiting.

Bait may only have to be placed for seven days to achieve control provided that sufficient bait for the size of the infestation is placed on day 1 of the treatment. To ensure that sufficient bait has been placed for the size of the infestation it is recommended to inspect baits 1-2 days after the first bait placement. If a bait point is completely consumed, double the amount of bait at that bait point. This will ensure optimum control in the shortest time is achieved. Inspect baits regularly. Note that if insufficient amount of bait is used at any time of the treatment, this may lead to sub-optimal results. If bait uptake should continue for longer than a week, continue placing bait every seven days until consumption ceases. When the uptake of bait has stopped, the remaining bait should be collected and disposed of safely.



Above: For best results, place **Selontra®** at covered bait points, in burrows or in bait boxes throughout the infested area. Please refer to the approved product label for specific use information.

Selontra®

Rodent Bait



Good hygiene practices should be employed to aid rodent control. Remove rubbish which may attract rodents and provide harbourage. To increase the likelihood of bait acceptance, the availability of other food sources should be minimised at the onset of treatment. Try to establish a barrier of bait points between living and feeding areas.

Baits must be securely placed in a way that minimises the risk of consumption by other animals or children. Where possible, secure baits so that they cannot be carried away. The product must never be placed indiscriminately.

Rodent death will occur two to four days after ingestion of a lethal amount of bait. Search for and remove dead rodents at frequent intervals during treatment, at least as often as when baits are checked. Dispose of dead rodents and unused bait in accordance with local requirements.

Resistance Management

It is considered highly unlikely that resistance to cholecalciferol could develop and there is not a single known report on rodents showing resistance to cholecalciferol. Cholecalciferol is the key regulator of calcium levels in the blood, crucial for a variety of physiological processes, including bone formation, blood clotting, and neuromuscular action. The amount of calcium circulating in the

blood is very carefully regulated, generally keeping blood calcium levels within 2-3 percent of normal; in most mammals, changes of more than 10-15 percent can be fatal.

To develop resistance to cholecalciferol would require rodents to become less sensitive to the physiological actions of cholecalciferol, either through loss of receptors, increased metabolism, accelerated clearance, or other mechanisms. However, any significant change in sensitivity to cholecalciferol would, at the same time, profoundly affect physiological processes and would therefore, very likely, be fatal.

For these reasons, there is very limited likelihood of resistance developing.



Above: Inspect areas of harbourage for rodents such as stacks of straw bales and feed bags. Practicing good hygiene such as removing rubbish and other food sources will help control rodent infestations.

Selontra®

Rodent Bait



Toxicological Profile

Studies show cholecalciferol has a favourable toxicological profile with low toxicity to most mammals and avian species, but with rodents showing a particular sensitivity. It is rapidly absorbed from the gastrointestinal tract and has a plasma half-life of 4-6 hours. This is the time it takes for the amount of cholecalciferol in the plasma to reduce by half.

Overall, the likelihood of adverse exposure to non-target animals via secondary poisoning is limited. Available secondary poisoning studies repeatedly demonstrate minimal adverse effects to non-target animals.

Toxicity to Mammals

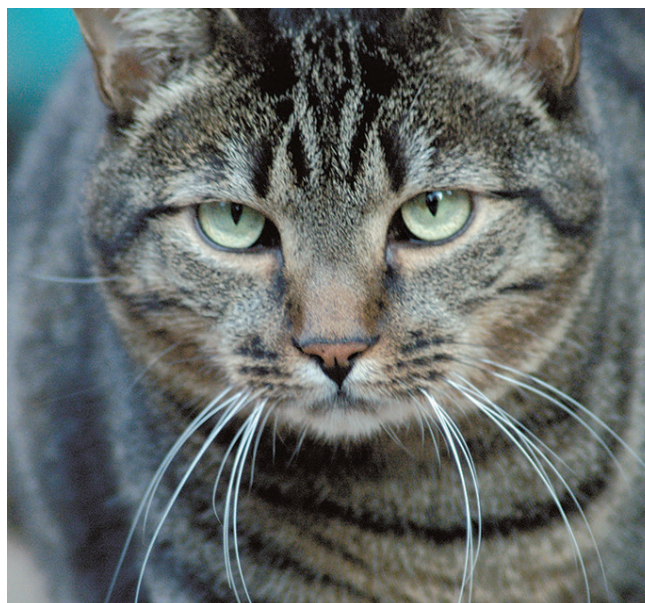
Cholecalciferol has low acute mammalian toxicity (except to rodents) via the oral, dermal and inhalation exposure routes. It is not an eye or skin irritant, nor a skin sensitizer. Studies indicate cholecalciferol is unlikely to have any genotoxic or carcinogenic potential following dietary exposure. There is no evidence of toxicity to reproduction or development.

Species	Study	Effect Level
Rat	Acute oral LD ₅₀	41 mg/kg
Rat	Acute dermal LD ₅₀	61 mg/kg
Rat	Acute inhalation LD ₅₀	> 130 – 380 mg/m ³ (0.13-0.4 mg/l)
Rabbit	Eye irritation	Non-irritant
Rabbit	Skin irritation	Non-irritant
Rabbit	Skin sensitisation	Non-sensitising
Dog	Acute oral LD ₅₀	88 mg/kg
Cat	Acute oral LD ₅₀	1000 mg/kg

Toxicity to Avian Species

Cholecalciferol is considered to have low toxicity to birds following acute oral and dietary exposure.

Species	Study	Effect Level
Bobwhite quail	Acute oral LD ₅₀	> 2000 mg/kg
Mallard duck	Acute oral LD ₅₀	> 2000 mg/kg
Bobwhite quail	Acute dietary LD ₅₀	> 600 ppm NOEC = 93.6 ppm
Mallard duck	Acute dietary LD ₅₀	> 1200 ppm NOEC = 93.6 ppm



Above: One of the key benefits of cholecalciferol is its lower secondary toxicity to non-target animals.

Selontra®

Rodent Bait

Toxicity to Aquatic Organisms

The exposure of the aquatic environment is considered to be unlikely when using **Selontra®**. However, data indicates low and medium acute toxicity of cholecalciferol to fish and aquatic invertebrates, respectively.

Species	Study	Effect Level
Fish	Acute (96h) LD ₅₀	1000 mg/l
Aquatic invertebrates	Acute (48h) EC ₅₀	13 mg/l

Toxicity to Honeybees

Based on the method of application of **Selontra®**, exposure to honeybees is considered very unlikely.

Toxicity to Earthworms

The exposure of the soil environment will be very limited and localized to soil around baiting points if the bait is dropped on the ground. Cholecalciferol has a low toxicity to earthworms.

Species	Study	Effect Level
Earthworm	Reproductive toxicity LC ₅₀	> 1000 mg/kg soil

Environmental Profile

Cholecalciferol is a naturally occurring substance, which has a very low solubility in water. When used according to label directions, **Selontra®** does not contaminate aquatic ecosystems. Cholecalciferol is not readily biodegradable, but is not persistent in soil. Due to low volatility, significant exposure to air is unlikely. **Selontra®** is intended to be used in burrows and at covered and protected bait points, which will limit environmental exposure.

Environment	Study	Effect Level
Air	Vapor pressure	6.0 x 10 ⁻⁵ Pa at 25 °C
Soil	Soil half-life	40 days
Water	Solubility	< 0.5 µg/l at 20 °C



Above: **Selontra®** poses a lower risk of secondary poisoning to birds of prey such as barn owls.

Selontra®

Rodent Bait



Safety, Stewardship and First Aid Measures

Please refer to the approved product label for more specific safety, stewardship and first aid measures.

Safety Instructions

- Avoid contact of the product with eyes and skin. Protective gloves should be worn when handling the product.
- Do not eat, drink, or smoke while working with the product.
- After using the product, remove protective clothing and wash face and hands with soap and water.
- Use additional protective equipment or handling precautions as required by local conditions, ordinances or laws.

Stewardship

Stewardship measures for **Selontra®** include bait-intrinsic safety features and the recommended application methods listed on the product label.

Bait-intrinsic features:

- Baits contain **Bitrex®** bittering agent, a human taste deterrent. A warning dye helps to distinguish **Selontra®** from food and when observed in animal faeces indicates that an animal has ingested **Selontra®**.
- The bait presentations (securable soft bait formulation) is securable which has a lower risk of spilling or being carried away from bait-points than some others (i.e. pellets or loose grain).

Recommended application methods on product label:

- The use of the product is restricted to in and around buildings and in sewers.
- Baits should never be broadcast or placed indiscriminately.
- Baiting advice aims at efficient and quick control of infestations.
- If sufficient bait is offered for the infestation size, full control may be achieved within 7 days, thus minimising the time the bait is available to non-target animals and birds.
- Bait placement should be in covered and protected bait points or tamper-resistant bait boxes so as to minimise the risk of consumption by other animals, domestic pets or children.
- Unless under the supervision of a pest control operator or other experienced person, baits should not be in place permanently.

Storage Notes

Store in original container, tightly closed and keep in a cool, dry, well-ventilated place away from products with an odour. Prevent access to bait by children, birds and non-target animals (particularly dogs, cats, pigs and poultry).

Selontra®

Rodent Bait



Disposal

Dispose of old or unused bait safely as per label directions and in accordance with appropriate local guidelines, regulations, and laws.

First Aid Measures

- Rinse exposed skin immediately with soap and water.
- If in eyes, rinse with plenty of water for several minutes and seek medical advice.
- If swallowed, contact a poison control centre or doctor immediately for treatment advice.
- Treat symptomatically. Treatments include a low calcium diet, high salt and fluid intake and avoidance of exposure to sunlight while monitoring calcium levels.

Treatment for Pet, Non-target Animal or Human Poisoning

Call veterinarian/doctor immediately if a pet, other non-target animal or human consumes this product.

Note to Physician/Veterinarian

Cholecalciferol causes hypercalcaemia. Treat symptomatically. Treatment would include a low-calcium diet, high salt and fluid intake and avoidance of exposure to sunlight. Monitoring serum calcium levels may aid treatment. Cortisone has been used successfully in some cases.

Poisoning Symptom Information/Injury Reporting

To obtain information on symptoms of poisoning or if you have concerns about using **Selontra®**, please contact the appropriate emergency advice line below.

GRIFFON POISON INFORMATION CENTRE

24 HOUR POISONING EMERGENCY

HELPLINE: 082 446 8946



This brochure is intended as advice. The recommendations for use issued for each product should be carefully observed.

® = registered trademark of **BASF**

Use biocides safely. Always read the label and product information before use.

For further information please contact:

Tel: +27 11 203 2400 | +27 82 498 4437

E-mail: heinrich.havemann@basf.com

Web: www.pestcontrol.basf.co.za

www.agro.basf.co.za

 **BASF**

We create chemistry



BASF South Africa (Pty) Ltd • 852 Sixteenth Road, Midrand, 1685 PO Box 2801, Halfway House, 1685

Selontra® Rodent Bait Reg. No. L10101 (Act No. 36 of 1947) Contains Cholecalciferol 0.75 g/kg.

Hazard Statements: If medical advice is needed, have product container or label at hand. **READ THE LABEL BEFORE USE.**