

SILVERLINE®

Enjoy your garden

Unique sound technology for a pest-free home



Pest Protect
system®

Silverline® A-Guard™ sound technology

Silverline® Pest Protect system® is a range of electronic products that repel and scare away various types of pests and insects. All products in the range emit a varied ultrasonic signal that scares away and unsettles the particular animal the product is designed to repel. The sound affects their natural behaviour, stressing them and creating an unbearable environment that they want to avoid. Silverline® Pest Protect system® repels and protects effectively.

A-Guard™

All products in the Silverline® range use A-Guard™ sound technology, with wide and tailored coverage. Both mice and rats, as well as certain other animals and insects, use ultrasound in their communication. Through our understanding of nature's own method of communicating, we have developed repellers that use unique A-Guard™ sound technology. Our adapted sonic patterns disrupt animals' communication and natural behaviour and repel in the most effective way, using a varied frequency range, 24 hours a day.

ElectroPulse™

We have also equipped some of our Mice & Rat Free™ products with ElectroPulse™. The electromagnetic pulse supplements the ultrasonic effect and aims to deter rodents from using wiring as a rat-run. ElectroPulse is suitable for spaces where there is a constant mains supply because of other electrical units.

Double Guard™

Double Guard provides a dual level of protection! Both A-Guard and ElectroPulse give you maximum protection against mice and rats.

Energy Efficient

Silverline® Pest Protect system® has very low electricity consumption, which represents cost savings for both you and our environment.

ECO

Silverline® Pest Protect system® repels pests without the use of poison, making it the best option for both you and our environment.

Water Proof IP55

Our new Silverline® MR 130 DG4 is IP55-rated, which means you can use it even in damp and dusty spaces. Ideal for use in crawl spaces, cellars, stables, attics, garages, storage areas and other uninsulated places. Safe technology with a high level of functionality.



Tested and proven

Many animals can perceive sound frequencies that are inaudible to humans (Brown and Pye 1975; Heffner and Heffner 2007). Mice and rats, for example, are very sensitive to ultrasound (Olivier et al. 1994).

In order to investigate the repellent effect of our Pest Protect products, we have had an experimental study conducted into the behaviour of mice under the influence of ultrasound, as well as a study of sound measurements for eight of our products, in order to establish that the sound emitted by our products is correctly adapted for the particular animal it is designed to repel.



Experimental study 12-12.U/ELMF-01

The experimental study (12-12.U/ELMF-01) showed that mice actively try to avoid ultrasound by keeping as far away from it as they can. The study also showed that it is important for the repellers to emit a correctly-adapted and varying ultrasonic signal, A-Guard™. The effectiveness of our Pest Protect products was established for the intended areas of use.

Sound measurements 01-13.A-F/U-01 & 01-18.A-F/U-02

In order to clarify the importance of our products emitting the particular sonic pattern that produces the best results for the animal it is designed to repel, we had measurements taken at KTH Royal Institute of Technology in Stockholm, Sweden. The sound measurements were taken in an echo-free room in order to map out the sound emitted from each product, its time function, frequency content and directivity.

Silverline Pest Protect system®

In-house product development guarantees the best possible quality and product safety, and ensures that production is managed carefully in order to fulfil environmental requirements and manufacturing safety. All Silverline® products have CE approval and most are GS marked according for European adaptation. They are also RoHS marked. All packaging material is recyclable. Silverline products are developed with functionality, quality and minimal environmental impact in mind.



Good working conditions and a sustainable global value chain

Miljöcenter is a member of amfori (Former FTA - Foreign Trade Association) and operates according to their guidelines and Code of Conduct to ensure that our products are produced under good working conditions and with a sustainable global value chain.



Experimental study 12-12.U/ELMF-01

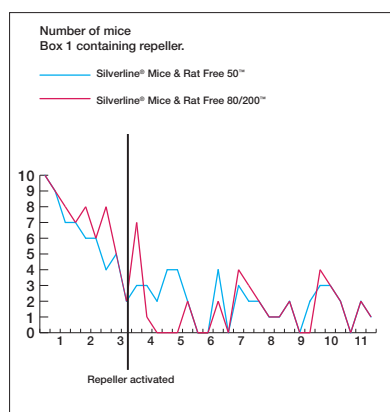
In order to investigate the repellent effect of our Pest Protect products, an experimental study (12-12.U/ELMF-01) has been performed. This study was designed to provide information on the repellent effect and the effectiveness of Silverline® Mice & Rat Free™ products. For comparison, we also tested a product from another brand, and we had a control group.

The study was divided into four experimental groups:

1. MR 50, which generates ultrasonic signals within the range of 20-40 kHz at an acoustic pressure level of 95 dB.
2. MR 80 DG2, which generates ultrasonic signals within the range of 18-40 kHz at an acoustic pressure level of 100 dB, along with a low-frequency electromagnetic pulse that extends through the electrical installation.
3. A product from another brand, which generates ultrasonic signals within the range of 30-60 kHz at an acoustic pressure level of around 95 dB, along with a low-frequency electromagnetic pulse that extends through the electrical installation.
4. A control group of mice for reference.

The repellent effect of ultrasound on mice and rats

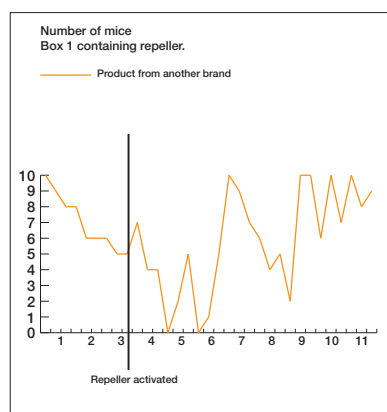
The study was performed using two boxes joined by means of a connecting tube. 10 mice were used for each experimental group, with 5 mice placed in each box simultaneously. For the first 36 hours, none of the products were switched on, so that the mice could have the opportunity to get acclimatised. After 36 hours, the products in experimental groups 1-3 were activated, and the mice were observed at 9 am, 1 pm and 5 pm every day for 11 days in all units. The number of mice in each section of the units was counted: Box 1, the Connecting Tube and Box 2. Humidity, temperature, food and water were carefully controlled. Artificial lighting was switched on between 9 am and 5 pm. The mice were able to move about freely in each unit. Food and water were provided in Box 1 and Box 2 in all units.



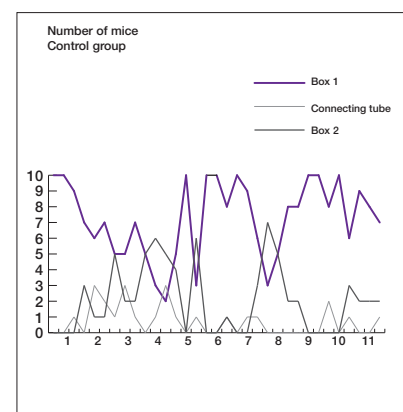
The graphs show the number of mice that stayed in Box 1 when the relevant repellers were switched on.

For experimental groups 1 (blue line) and 2 (red line), where the products MR 50 and MR 80 DG2 were switched on, we can see that most mice avoided Box 1 when the repellers had been activated.

The mice then preferred to stay in Box 2, as far away as possible from the repellents.



If we compare these with the yellow line that represents experimental group 3, where the product from another brand was switched on, we can see a clear difference. The mice first displayed a degree of avoidance behaviour, but then returned to Box 1, where the repeller had been activated.



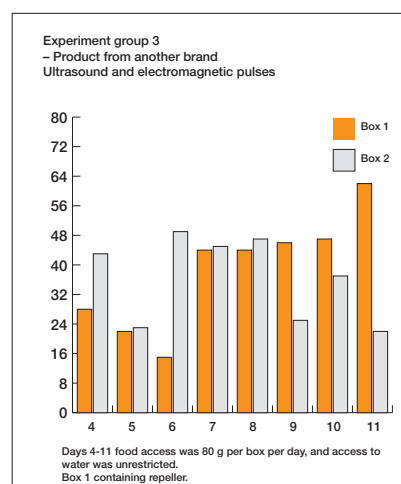
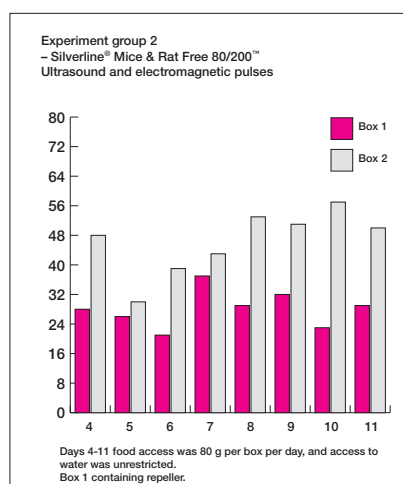
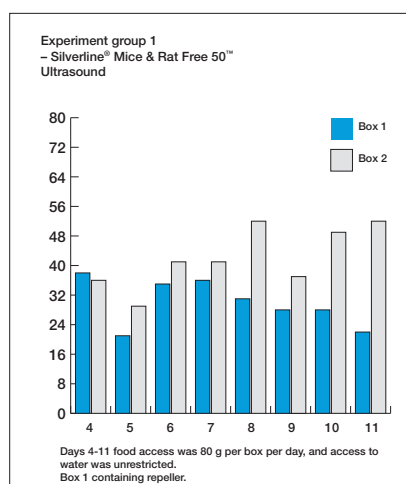
In the control group, where no repeller was activated, it could be observed that the mice stayed in Box 1, the Connecting Tube and Box 2.

Food consumption during observation period

The supply of food and water was the same in all boxes. Every morning fresh water was provided, and food consumption was calculated by weighing the amount of food required to bring it up to the same level as the previous day.

On days 1-3 all mice had free access to food and water in all boxes. On days 4-11 the supply of food was 80 g per box per day, and the supply of water was unrestricted.

The bar charts show food consumption during the observation period in Box 1 (coloured bars), where the relevant repeller was switched on, compared with Box 2 (grey bars).



For experimental groups 1 and 2, where the products MR 50 and MR 80 DG2 were switched on, we can see a clear repellent effect. Most mice preferred to eat in Box 2, where there was no repeller installed.

For experimental group 3, with the product from another brand, we can see that after several days, food consumption increased in Box 1, where the repeller had been activated.

A-Guard™ technology – with varying frequency

MR 50 and MR 80 DG2 displayed a clear repellent effect, since the mice reacted with strong avoidance. This was made clear by where the mice went during the observation period as well as through the monitoring of food consumption.

The product from another brand displayed a weaker repellent effect compared with the Silverline® products: the mice avoided it for a time, only to then increase their food consumption in the box where it was installed.

Need for varying and adapted frequency

The fact that mice adapt to ultrasound after a few days creates a need for products with a correctly-adapted and varying frequency. This minimises the risk that mice will get used to the sound and stay in the area, or return, instead of moving away.

Exposing pests to a varying frequency and electromagnetic pulses that extend through the electrical installation provides protection from mice getting established indoors.



Sound measurements 01-13.A-F/U-01

Measurements have been made twice. The first measurements were taken for four Silverline® Mice & Rat Free™ models and for the four Silverline® products Mosquito Free™ 25, Mosquito Free™ Mobile, Spider Free™ 30 and Cat & Animal Free™ 300. A second measurement was made in 2018 for four Silverline® Mice & Rat Free™ models and for Spiderfree S30. The measurements were taken at KTH Royal Institute of Technology in Stockholm, Sweden, by Torbjörn Kloow.

Adapted and varied frequency

The sound measurements clearly show that the four Mice & Rat Free™ products generate an adapted and varying sonic pattern. They also show the differences between the four products regarding the operating range of the sound.

The fact that mice get used to ultrasound after a few days creates a need for a frequency that varies in an adapted way. The measurements show that the products use a technology that creates an advanced and varying sonic pattern, and that there are differences in the sonic pattern when the different settings are used on the products with this option.

The measurements also show that Mosquito Free™ and Spider Free™ create completely different sonic patterns, adapted for mosquitoes and spiders respectively.

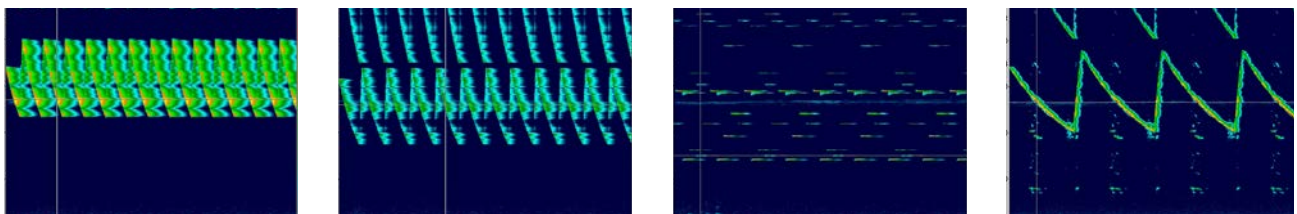
Cat & Animal Free™ has four different settings, with varying frequencies, as clearly shown by the measurements. This allows effective repelling of cats, dogs, roe deer and other animals.

A-Guard™ – high-tech ultrasound system

A-Guard™ is a high-tech sound system that provides effective protection against unwanted creatures. The measurements show that the products are adapted for each animal to provide the optimum repellent effect. Knowledge of the behavioural patterns of the various animals and insects has helped us focus on finding the precise frequency within each sonic pattern as well as the right acoustic pressure that will bring the desired result.

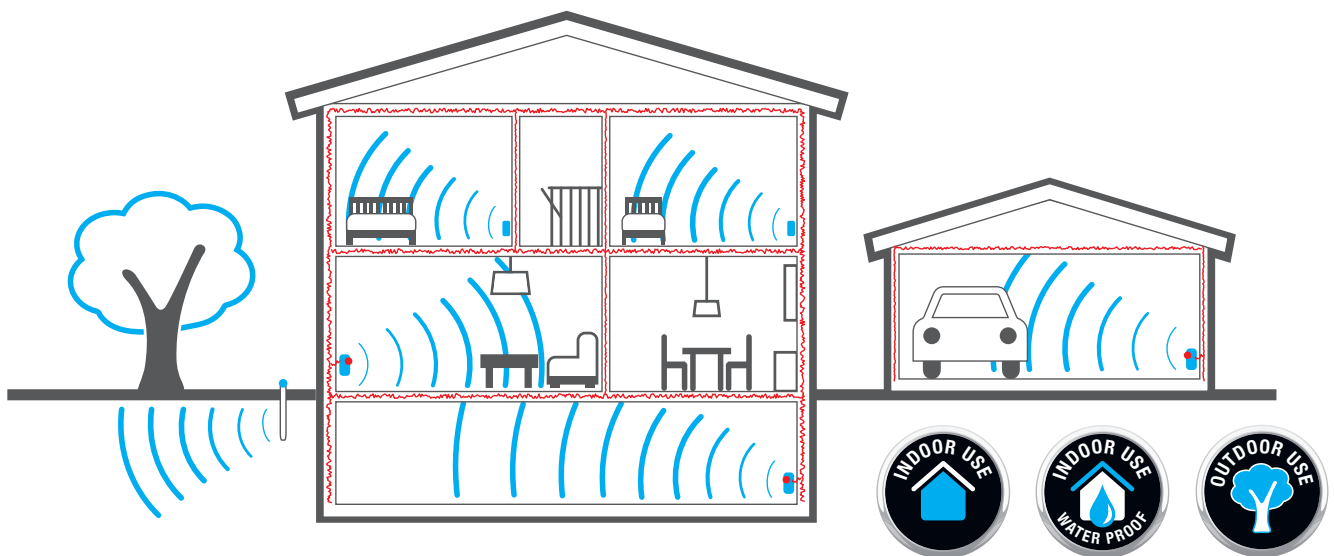


Our high-tech ultrasound system creates adapted sonic patterns, A-Guard™, for effective repelling.



The frequency diagrams clearly show the sonic pattern of the four Mice & Rat Free™ products. The high-frequency sound is adapted to effectively repel mice and rats in the best way. The diagrams also show that the various settings differ from one another. Being able to vary the setting, and thus the frequency and volume, reinforces the results. The measurements further show that each product emits an adapted sonic pattern for the particular animal it is designed to repel.

Pest Protect system®



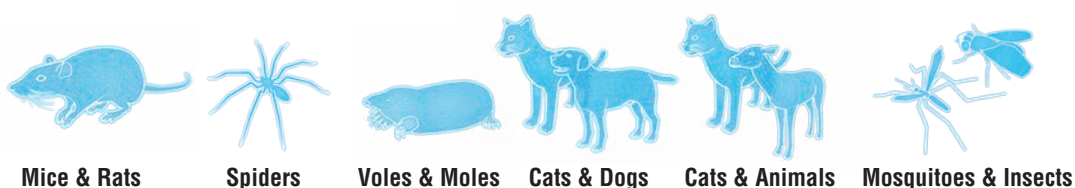
Choose your own level of protection

Silverline® Pest Protect system® gives you a reliable and safe system solution to combat pests throughout your home. Silverline Pest Protect system protects your home around the clock, all year round, hygienically and free from toxicity. Silverline is the strongest brand within eco-friendly and non-toxic pest deterrent systems.



Our pest protection range

Silverline Pest Protect system offers you many different solutions to combat pests, both indoors and out, e.g. mice, spiders, cats and voles. All needs and homes are different – so you can adapt our Silverline Pest Protect system to suit you. Our products are simple to use, hygienic and totally non-toxic.





Miljöcenter
Ditt naturliga val

Our business concept - Miljöcenter your natural choice!

Miljöcenter sells better and safer solutions for homes and gardens including pest and weed control, heaters, composting and secure mail, with added value for the environment – in Europe.

We develop and sell more profitable in-house-developed consumer products and solutions for the whole value chain. Our brands: Silverline, GreenLine, Berglund and Neudorff.

Miljöcenter operates in Europe, with the Nordic region as its home market. We have two business areas – Store and Professional – and have been established in Malmö, Sweden since 1991.

Our vision

We want to contribute to eco-smart and safe homes and gardens in Europe.



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