

# COMMENSAL RODENT FACTS

**FIRSTSTRIKE® • RESOLV® • TAKEDOWN®  
FLATLINE® • GENERATION® • BLUEMAX™**

**MAKI® • AEGIS®**

**SOFTSECURE TECHNOLOGY™**

ADVANCED RODENT CONTROL TECHNOLOGY



**LIPHA**  
**TECH®**

## Knowledge is the key.

Before you can effectively prevent or control rodent infestations, you must first arm yourself with information. Learning about rodent behavior, control materials and treatment tactics is essential to planning an effective strategy for controlling unwanted rats and mice.

This easy-to-use reference guide compiles in-depth information from numerous experts in the rodent control industry, including scientists, biologists and experienced field technicians. Commensal Rodent Facts is designed to help you develop an integrated approach for controlling commensal rodent infestations. This will result in fewer callbacks, more satisfied customers and reduced risk of rodent-related damage and disease.

# Integrated Pest Management for Rodents



Liphatech understands the issues facing pest management professionals (PMPs). We constantly strive to develop new technologies and materials to help you fight rodent infestations.

The goal of integrated pest management (IPM) is to “work smart” with a comprehensive attack plan that uses the appropriate combination of tools, so you can cost-effectively control pests with the least amount of risk to the environment.

## Elements of an IPM Program include:

- Inspecting structures and surrounding areas to determine the scope of the infestation and to identify conditions contributing to the problem.
- Identifying which species are present and the size of the population.
- Implementing infestation elimination measures tailored to the site (i.e. sensitive locations such as food plants).
- Correcting sanitation concerns, which may be providing rodents with food, water and shelter. Keep in mind, rodents are much

more mobile than crawling insects. If sanitation efforts precede elimination, the rodents may relocate, compounding your problem.

- Modifying structures can keep new rodents from entering. However, it may not help eliminate a breeding population already in a structure.
- Evaluating results and making necessary improvements to the program.

There is no specific “recipe” for rodent IPM. However, a successful program starts with a commitment to do whatever is necessary to create a rodent-free environment. From there, individual steps will depend on the particular situation.

## PROBLEMS

### The trouble with commensal rodents.

Commensal is defined as “sharing one’s table.” Commensal rodents, which include Norway rats, roof rats and house mice, live off humans and animals without returning anything of worth. What they do return is the potential for serious problems.

- **Spread serious diseases**, including salmonellosis (food poisoning), leptospirosis, rickettsialpox and lymphocytic choriomeningitis (LCM).
- **Carry fleas**, ticks and other ectoparasites, which potentially spread other diseases, such as Lyme disease and bubonic plague.
- **Consume or contaminate** about 20 percent of the world’s food supply.
- **Gnaw**, causing expensive structural damage. They also can start fires if they gnaw on electrical wires.
- **Cause a great deal of anxiety** for occupants (people and pets) of infested buildings.
- **Pose serious risks for food facilities.** Even a single rodent can cause serious problems for a food facility including fines, poor inspection scores, disgruntled employees and lost business.

## TRAITS

**Other Names:**  
common  
house mouse  
and domestic  
house mouse.

# House Mouse

**Ears.** Relatively large ears for its size. They hear very well in both sonic and ultrasonic ranges.

**Eyes.** Eyes are small and somewhat protruding. Mice are color-blind and can only recognize objects up to 10 feet away.

**Body.** Body is small, pear-shaped and slender, 2-1/2 to 3-1/2 inches (6.35 to 9 cm) long. Average weight is 1/2 to 1 ounce (14.17 to 28 g).

**Teeth.** The four front incisors are each about 1/16 inch wide.

**Color.** Varies from light brown to dusky gray to nearly black. Belly is lighter.

**Tail.** The tail is 3 to 4 inches (7 to 10 cm) long, semi-naked and longer than the head and body combined.

### Food Preferences and Consumption.

Omnivores. Seeds (preferred food), cereal grains, fruits, vegetables and meats. Mice frequent many feeding sites – often 20 to 30 – during their active period, eating small amounts of food from each site. Daily consumption: 1/10 ounce. Water is not essential to survival if food contains at least 16 percent moisture.

**Habits.** Excellent climbers. Can be found in cultivated fields and other outdoor environments. Can also be found at or below ground level and in attics. Mice explore their territory daily in search of food. Nocturnal. Most activity and feeding takes place between a half hour after sunset and a half hour before sunrise. Strong social hierarchy. Able to swim.



### Geographic Range

Throughout the United States and south of the boreal forest in Canada.

**Whiskers.** Whiskers on the face and guard hairs on the sides and back help an animal with poor eyesight stay safely against walls, under objects and in burrows. Whiskers are also used to detect motion and test surfaces, e.g., glue traps, before stepping on them.

**Droppings.** Droppings have pointed ends and are about 1/4 inch (.64 cm) or less in length. Fresh droppings are soft and dark in color. A house mouse averages 50 to 75 droppings per day.



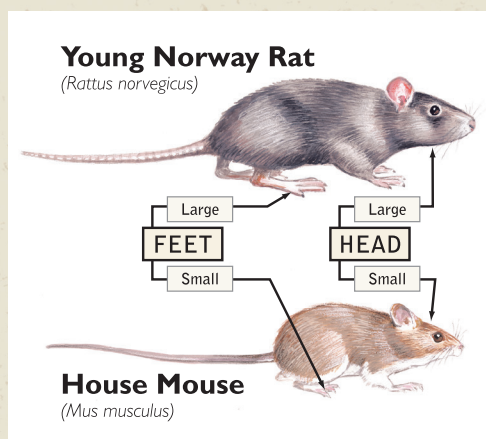
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## MOUSE FACTS

Mice can survive an 8-foot fall onto a hard surface.

A mouse can run at about 12 feet per second.

## COMPARISON



## TRAITS

### Other Names:

Alexandrine rat,  
black rat, fruit rat  
and ship rat.

# Roof Rat

**Ears.** Ears are large and cover the eyes if bent forward.

**Eyes.** Eyes are large and prominent. Because rats are color-blind and have poor eyesight, they primarily see light, shadow and movement.

**Body.** Body is slender; 6-1/2 to 8 inches (17 to 20 cm) long. Average weight is 6 to 12 ounces (170 to 340 g).

**Teeth.** The four front incisors are each about 1/8 inch wide. Rats are able to gnaw through wood, lead, aluminum, copper, cinder block and uncured concrete.

**Whiskers.** Whiskers on the face and guard hairs on the sides and back help an animal with poor eyesight stay safely against walls, under objects, and in burrows. Whiskers are also used to detect motion and test surfaces, e.g., glue traps, before stepping on them.

### Food Preferences and Consumption.

Omnivores. Seeds, fruits, vegetables, eggs and grain. Rats visit fewer food sites than mice, but eat more at each site. Consumes 1/2 to 1 ounce of food daily. Drinks up to 2 ounces of water daily.

### Geographic Range

Roof rats are best suited to warm climates, but are often also associated with ocean, Great Lakes and major river ports. In the United States, their range is expanding. Currently, they are found along the Pacific Coast, the southern two-thirds of the Atlantic Coast, throughout the Gulf states, in heavily-irrigated areas in the desert southwest and in Hawaii. In Canada, they are found along the Pacific Coast, the southern Atlantic Coast and occasionally in extreme southern Ontario. They are also occasionally transported by truck or rail to interior states where they have become established indoors.

**Habits.** Able to swing, jump and climb, roof rats usually enter and nest in upper portions of buildings. May nest outside in trees (especially palm), ivy and similar vegetation. Burrowing can occur during heavy infestations. Nocturnal. Most activity and feeding takes place between a half hour after sunset and a half hour before sunrise. Strong social hierarchy.



(actual size)

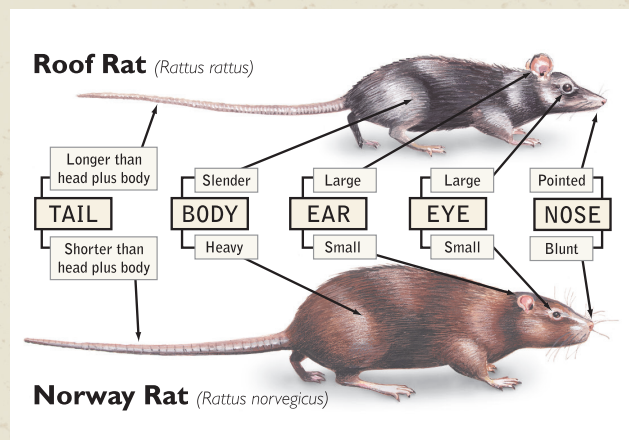
**Tail.** Hairless and longer than the head and body – 7-1/2 to 10 inches (19 to 25 cm) long. Uniform color from top to underside.

**Nose.** Nose and muzzle are pointed. Roof rats have an acute sense of smell.

**Color.** Usually dark brown to nearly black. Belly is lighter and grayish.

**Droppings.** Droppings have pointed ends and are about 1/2 inch (1 cm) or less in length. Fresh droppings are soft and dark in color. A roof rat averages 40 to 50 droppings per day.

## COMPARISON



## TRAITS

### Other Names:

brown rat, gray rat, common rat, house rat, wharf rat, sewer rat, barn rat and water rat.

**Body.** Body is heavy and thick, 7 to 10 inches (18 to 25 cm) long. Average weight is 10 to 17 ounces (284 to 482 g).

**Teeth.** The four front incisors are each about 1/8 inch wide. Rats are able to gnaw through wood, lead, aluminum, copper, cinder block and uncured concrete.

**Whiskers.** Whiskers on the face and guard hairs on the sides and back help an animal with poor eyesight stay safely against walls, under objects, and in burrows. Whiskers are also used to detect motion and test surfaces, e.g., glue traps, before stepping on them.

### Food Preferences and Consumption.

Omnivores. Meats, fish, flour, cereal grains, fruits and vegetables. Eats almost any human food. Rats visit fewer food sites than mice, but eat more at each site. Consumes 3/4 to 1 ounce of food each day. Requires water daily to survive – drinks 1/2 to 1 ounce of water daily.

## RAT FACTS

Rats (indeed all rodents) prefer harborage as close to food as possible. However, if necessary they will travel several hundred feet from good harborage to good food.

Rats have been known to survive a fall from 25 feet to a hard surface.

Rats can and do enter buildings by swimming up through a toilet. Dry drains and toilets are even easier routes of entry for rats coming from a sewer system.

# Norway Rat

**Ears.** Ears are average, close to the body and won't cover the eyes if bent forward.

**Eyes.** Eyes are small. Because rats are color-blind and have poor eyesight, they primarily see light, shadow and movement.



**Tail.** Tail is shorter than head and body – 6 to 8-1/2 inches (15 to 22 cm) long. Tail is dark on top with a lighter underside.

**Nose.** Nose and muzzle are blunt. Norway rats have an acute sense of smell.

**Color.** Usually grayish-brown, but color may vary from gray to dark brown. Belly is lighter.

**Droppings.** Droppings have blunt ends and are about 3/4 inch (2 cm) or less in length. Fresh droppings are soft and dark in color. A Norway rat averages 40 to 50 droppings per day.



(actual size)

### Geographic Range

Due to their excellent adaptability, Norway rats are found throughout the United States and most of the urban and agricultural areas in Canada.

**Habits.** Norway rats burrow extensively in soil and are excellent swimmers and good climbers. They often nest in basements and lower portions of buildings. Nocturnal. Most activity and feeding takes place between a half hour after sunset and a half hour before sunrise. Very strong social hierarchy – the biggest and strongest Norway rats get the best food and harborage.

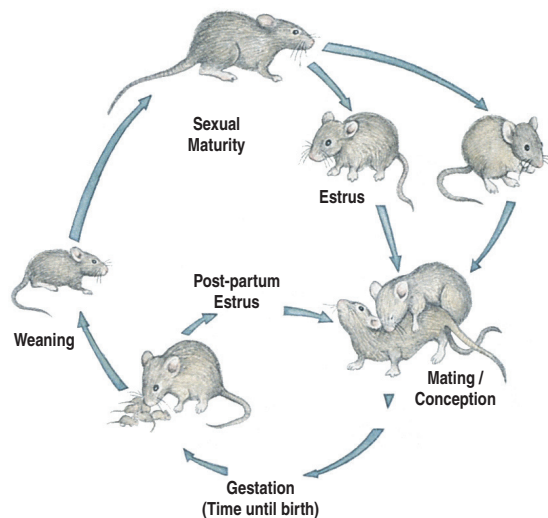
## Reproduction and Development

Mice and rats reproduce rapidly, as is generally the case with small prey animals. Their relatively short life spans, short gestational periods and rapid sexual maturity make effective rodent control critical. The reproductive cycle and number of rodent offspring increases with adequate food, water and harborage.

### House Mouse and Rat Reproduction Cycle

	Gestation (time to birth)	Pups per Litter	Eyes Open	Begin Exploring	Weaning	Sexual Maturity
House Mouse	18-21 Days	5-6	14 Days	3 Weeks	3 Weeks	6-10 Weeks
Norway Rat	21-23 Days	6-12	9-14 Days	2 Weeks	3-4 Weeks	8-12 Weeks
Roof Rat	20-23 Days	4-8	9-14 Days	2 Weeks	4-5 Weeks	12 Weeks

All numbers are approximations.



## RELATED TRAITS

### Related Reproductive Characteristics

House mice, Norway rats and roof rats share several reproductive characteristics:

- After giving birth, commensal rats and mice can experience post-partum estrus. This means the female can be in heat and able to become pregnant again in as little as 24 to 48 hours.
- Females can be pregnant and still produce milk to feed their current litter of pups. However, the gestational period may be slightly longer in this case.
- They will reproduce year-round in stable environments with adequate food, water and harborage. Less favorable conditions limit reproduction to spring and autumn.
- Normal life expectancy is approximately one year. However, research has found most rats and mice do not survive a year in the wild. Predation, disease, starvation, cannibalism and PMPs all take their toll.

## The Inspection Process

Rodents behave predictably. A rodent control expert is a detective searching for clues that point to an infestation. This knowledge is then used to choose appropriate rodent control tools and techniques, and when to use them.

### The Inspection Process

- Interview customers for information about rodent sightings and sounds.
- Perform a thorough inspection, beginning with the exterior premises, if appropriate.
- Think three-dimensionally, looking both high and low. Rodents have been known to climb 30 feet to gain access to a structure, roof rats even more.
- Identify interior and exterior problem areas including: runways, nests, feeding sites, water supplies, vents and other openings, burrows, harborages, pipe outlets and inlets, and holes or cracks in the structure.
- Check all dark areas with a flashlight.

### Physical Signs of Infestation

Look for these common signs of rodent infestation:

- **Runways** – Paths will form between feeding and harborage areas. Rodents use scent and memorization to follow established pathways between harborage and food/water. They prefer to move along objects. Identifying rodent movement patterns helps to effectively place traps and bait stations.
- **Droppings** – The size and shape of rodent droppings can offer some clues to the nature of the infestation. However, they may also be misleading. Avoid making decisions on only one clue. Furthermore, fresh droppings are often soft and shiny while older droppings tend to be dry and dull. Moisture, or lack of

it, in the environment can affect the way droppings appear.

- **Odor** – A distinctive, musky odor may be present.
- **Urine** – Look for urine stains. Rodent urine is often, but not always visible under black light. However, many other household and commercial products also fluoresce.
- **Gnaw Marks** – Fresh gnaw marks are often lighter in color and may darken over time. Adult mouse tooth marks are about 1/16th inch wide. Adult rat tooth marks are about 1/8th inch wide. The tooth marks are made with the rodents' incisors so they are usually in pairs. A good hand lens can help identify gnaw marks.
- **Rub Marks** – Rodents leave rub marks from body oil, grease and dirt along their runways. New rub marks may smear if you rub them with a gloved finger. Old rub marks are darker and may flake off.
- **Tracks** – Footprints and tail drags may be seen in dusty locations. To view difficult-to-see tracks, shine a strong flashlight at a low angle across the dust. A non-toxic tracking powder, such as a mason's line chalk, placed on a suspected rodent trail, and re-inspected the following day, also may assist in identifying tracks.
- **Upset Pets** – House pets, such as cats and dogs, may become agitated when they hear rodents gnawing, digging, running and fighting.



## TOOLS

### Inspection Tools

- **Flashlight** (with a strong beam) to find rodents and their signs in dark areas.
- **Black light** to help identify rodent urine.
- **Knife, palette knife or spatula** to test age of droppings and to scrape droppings out from under objects for identification.
- **Specimen container** to collect unknown specimens.
- **Protective gloves** to protect yourself from diseases carried by rodents.
- **Knee pads** to protect your knees from sharp objects on floors and in crawl spaces.

# Eliminate Conducive Conditions

Prevent infestations by changing the physical conditions of the building through exclusion and sanitation.

## Exclusion

The best way to keep buildings rodent free is to prevent rats and mice from getting inside. Rodents fit through tiny openings and can gnaw through wood, lead, aluminum, copper, cinder block and uncured concrete. Mice can squeeze through gaps larger than 3/8 inch by about 1/2 inch. Recent research has found adult rats need an opening larger than 1-1/3 inches in diameter. Juveniles may be able to fit through a smaller opening. They will enlarge openings that are too small by gnawing it big enough for their body to fit through. The following measures, with the proper materials, will make buildings less accessible to rodents:

- Patch openings in walls larger than 1/4 inch using gnaw-proof materials, such as steel sheeting, 1/4 inch hardware cloth, galvanized steel and concrete. Holes may be plugged with steel wool or copper mesh prior to patching.
- Seal gaps under siding at the top of the foundation.
- Seal openings around pipes and conduits where they pass through exterior walls.
- Close outside doors tightly when not in use.
- Install tight-fitting weather stripping on the bottom of all pedestrian doors and overhead doors.
- Cover all air vents with 1/4 inch hardware cloth. Make sure dryer vent “flaps” are working properly.

## Sanitation

Eliminating places that may provide rodents with shelter, water and food is the purpose of sanitation.

- Eliminate debris in and around buildings and grounds.
- Trim weeds and brush and keep grass short (3 inches or less) to minimize cover and food sources around the building perimeter.
- Clean up food waste and spillage daily.
- Store food 12 to 15 inches off the floor for easy inspection and sanitation. Use rodent-proof containers when possible.
- Allow 24 inch aisles between stored materials and walls for improved sanitation and inspection.
- Screen dumpster drainage holes with hardware cloth.
- Don't leave pet food out overnight. Clean up dog droppings daily.
- Eliminate water sources available to rodents.
- Clean up windfall fruits, nuts and bird feeder spillage daily.



- **Clipboard, graph paper and pencil** to diagram building and take extensive notes.
- **Inspection checklist** to act as a reminder to inspect critical areas.
- **Binoculars** to make it easier to see what you can't get close to.
- **Respirator** with appropriate filter to prevent inhaling dust, which may be contaminated with disease organisms. Consult with your safety equipment supplier for current recommendations.
- **Hand sanitizer** (over 62% alcohol) to kill bacteria when soap and water are not available.

## Trapping

In sensitive areas where rodenticide use is not permitted, traps are especially useful. Traps also prevent dead rodent odor problems by enabling the recovery of carcasses. After rodents and their patterns have been identified, follow the appropriate trapping methods.

### Trapping Tips

- Store snap traps away from insecticides and chemicals that may impart an odor. Remember, rodents have a keen sense of smell.
- Bait snap traps with food that is more attractive than other readily available food sources, such as gumdrops, peanut butter, bacon, nutmeats or dried fruit (raisins). Secure bait to the snap trap trigger – a length of thread works well. For rats, fish (tuna) and meat (cat/dog food) may be used to bait traps. Glue boards can be baited, if necessary, with non-oily foods. The use of peanut butter, bacon and other oily, greasy foods will cause the glue to lose its stickiness.
- Bait some mouse snap traps with nesting materials, such as a small cottonball or a short piece of yarn. Enhance it with a drop of vanilla extract. Mice constantly look for nesting material.
- Liphatech's Rat and Mouse Attractant™ is often readily accepted by both rats and mice when used as a lure on traps.
- Place mechanical or snap traps and glue boards in areas unsuitable for rodenticide applications.
- Position snap traps and glue boards to intercept rodents in runways. Place snap traps with the trigger toward the runway – generally along a wall, in corners, behind and under objects and near abundant tracks and droppings. Snap traps also may be attached to pipes and beams used as runways.
- More traps are better than fewer traps.
- Pre-bait traps until rodents, especially rats, overcome their fear and take bait readily. This may take several days for mature rats.
- Glue boards shouldn't be used in areas with excessive dust or wetness – both elements make glue boards ineffective.
- Check glue boards frequently to prevent rodents from escaping.
- For mice, repeating or automatic mechanical traps may be used. Watch for tracks in the dust on the top of low-profile traps, which indicate mice are running over the top of them.

## Rodenticide Application



When the situation permits, rodenticides usually provide the most cost-effective approach to rodent control. Select a rodenticide with an active ingredient and formulation that works well for the particular environment. Correct bait placement is key to an effective program. Proper placement ensures rapid rodent control and protects non-targets from bait contact.

## Choosing the Active Ingredient

Rodenticides are available with many active ingredients. Each type differs in the way it causes death.

**Anticoagulant** rodenticides inhibit the rodent's blood-clotting mechanism, causing internal bleeding which leads to death. There are two types of anticoagulant active ingredients: first generation (FGAR) and second generation (SGAR).

**First Generation Anticoagulants** (FGAR) are referred to as "multiple feed" products because rodents must feed more than once before ingesting a lethal dose. Active ingredients that fall in this category include chlorophacinone, diphacinone and warfarin. Vitamin K<sub>1</sub> is the antidote.

**Second Generation Anticoagulants** (SGAR) are referred to as "single feed" products because rodents can ingest a lethal dose in a single night's feeding with first dead rodents appearing in 4-5 days. The delayed effect of anticoagulants prevents bait shyness. Active ingredients that fall in this category include bromadiolone and difethialone. Vitamin K<sub>1</sub> is the antidote.

**Non-Anticoagulant** rodenticides are available that cause death in various ways. They take effect quickly and rodents typically stop feeding after one meal. If a lethal dose is ingested, death can occur in less than a day to a few days. Examples of non-anticoagulants:

**Acute neurotoxins** attack the central nervous system to cause death. A single night's feeding is usually enough to provide a lethal dose for rodents. Death can occur in less than a day to a few days. Bromethalin is an example of an acute neurotoxin. There is no antidote.

**Cholecalciferol** (Vitamin D<sub>3</sub>) affects calcium in the body. It causes blood calcium to rise to toxic levels which leads to kidney damage, bleeding and heart problems – killing the rodent.

**Zinc phosphide** is a systemic poison that attacks many bodily functions with damage that leads to the death of the rodent.

Properly handled by pest management professionals, rodenticides with anticoagulant or non-anticoagulant active ingredients provide an effective rodent control option and present little threat to humans or non-target animals.

## Rodenticide Formulations

It is important to choose the rodenticide formulation that will work best for your situation. Consideration should be given to the active ingredient and formulations, such as soft bait, mini blocks, paraffin blocks, pellets, meal bait, tracking powder and place packs.

- Second generation anticoagulant soft baits, such as FirstStrike and Resolv, are palatable to mice and rats. They are effective and can be used anywhere traditional block bait is used.
- TakeDown soft bait combines the power of an acute rodenticide with the palatability of soft bait. It is effective in fighting anticoagulant-resistant rodent populations and heavy infestations, especially those in a commercial setting.
- Flatline is a palatable, multiple-feed soft bait that effectively kills rats and mice. Flatline is for consistent everyday use – during light to heavy rodent activity.
- Mini blocks, such as Generation and Maki, contain many ingredients and have a multi-edge design for abundant gnawing surfaces, plus a center hole for securing on bait rods in a bait station.
- Paraffin bars resist moisture, making them ideal for moist environments. Maki paraffin bars are labeled for sewer applications.
- Paraffinized pellets resist moisture and molding. In bulk, paraffin pellets are an excellent choice for Norway rat burrow baiting. Both Generation and Maki pellets are paraffinized.
- Paraffin pellet place packs, including Generation and Maki, provide moisture protection. A poly lining preserves bait freshness while allowing rodents to smell the product. The place packs are convenient for hard-to-reach locations and provide important label information.
- BlueMax mini blocks have mold inhibitors. They are a good choice for audited accounts and where crumbs and scatter are a concern.

# Liphatech Professional Products



### FirstStrike®

Contains difethialone – perfect for gaining control of large or small rodent populations.

- 10g pouch in 16 lb pail, 2-8 lb pail case and 4-4 lb bag case.
- 40g pouch with 5 SSTs in 16 lb pail.
- Palatable second-generation anticoagulant soft bait.



### Resolve®

Contains bromadiolone – a good choice for budget-minded PMPs faced with moderate rodent infestation.

- 12g pouch in 16 lb pail and 4-4 lb bag case.
- 40g pouch with 5 SSTs in 16 lb pail.
- Palatable second-generation anticoagulant soft bait.



### TakeDown®

First bromethalin soft bait for the professional pest control market.

- 8g pouch in 4 lb bag (4 bags/case).
- Fights anticoagulant resistant populations and heavy infestations.
- Faster results than anticoagulants.



### Flatline®

First and only chlorophacinone soft bait.

- 28g pouch in 4 lb bag (8 bags/case).
- Multiple-feed soft bait for everyday use.
- Maintains integrity in hot environments.

## APPLICATION TIPS

### Rodenticide Application Tips

- Neophobia – the fear of new objects – makes roof rats and Norway rats extremely nervous about changes in their territory. It takes several days for rats to accept a new object in their environment, including bait stations.
- Place rodenticides in areas inaccessible to children and non-target animals, or in properly installed, tamper-resistant bait stations, such as Aegis® bait stations. Bait stations not only provide added security for children and non-target animals, but also protect bait from the elements and provide a comfortable place for rodents to feed and groom.
- Use a rodenticide, *FirstStrike*, *Resolve*, *TakeDown*, *Flatline*, *Generation*, *Maki* or *BlueMax*, labeled for the target rodent species and an appropriate formulation for the environment. Generation and Maki paraffinized pellets work well for burrow treatment. They are paraffinized to withstand the moist environment in some burrows.
- Using information obtained during the inspection process, place baits in rodent runways as close to their nest as possible.



## Generation®

Contains difethialone – second-generation anticoagulant with whole grains and seeds.

- Available in mini blocks, pellets and pellet place packs.
- Bulk pellets with paraffin are labeled for burrow baiting.
- Mini blocks have gnawing edges and center hole for securing in bait station.



## BlueMax™

Contains difethialone – second-generation anticoagulant in a long-lasting, low crumb bait.

- Available in mini blocks and meal bait.
- Contains mold inhibitors.
- Mini blocks contain paraffin for moisture tolerance.

## Maki®

Versatile second-generation bromadiolone bait with 3+ decades on the market.

- Flexibility with formulations: mini blocks, pellets, pellet place packs & paraffin blocks.
- Paraffin blocks labeled for use in sewers.
- Paraffinized pellets are approved for use in burrows.



## Aegis®

Baits stations offering speed, quality and performance.

- Mouse and rat bait stations available with various features.
- All Aegis stations can be mounted vertically or horizontally.
- One universal key opens all Aegis stations.



## Rat & Mouse Attractant™

A non-toxic soft bait for monitoring activity or attracting rodents.

- Safe to use. No threat of secondary poisoning.
- Use as attractant on snap traps.



- Use a sufficient amount of product, within the amounts allowed by the label, to assure an uninterrupted supply of bait between service visits.
- In areas of identified mouse activity, rodenticide bait placements should be no further than 8 to 12 feet apart due to their limited home range. Place control material as close to the nest as possible, and between the nest and food source.
- In areas of identified rat activity, rodenticides should be placed every 15 to 30 feet. Concentrate placements in runways and near burrows or gnawed openings.
- Keep a detailed record of bait station placements, rodenticide formulations, amounts used and service dates.
- Pre-baiting is the process of placing non-toxic bait prior to toxic bait in order to increase product acceptance and to also offer a way to monitor rodent feeding with less toxicant present. Liphatech Rat & Mouse Attractant is a highly accepted non-toxic soft bait formulation and our NoTox™ monitoring blocks are a non-toxic mini block that can be used as a pre-bait.

## EXPERTISE

### No rodenticide manufacturer offers as much support as Liphatech.

- A team of experts focused on providing effective rodent control solutions.
- Field representation with extensive, real-world experience in rodent control.
- A history of research and development successes that includes:
  - TakeDown soft bait, the first bromethalin soft bait for the professional pest control market.
  - FirstStrike soft bait which contains difethialone, available only from Liphatech.
- Personalized technical support, troubleshooting assistance and training.
- Liphatech is the inventor and registrant of three rodenticide active ingredients: chlorophacinone, bromadiolone and difethialone.
- Liphatech is a subsidiary of France-based De Sangosse, with worldwide research, development and manufacturing capabilities for agricultural products and rodenticides.



For more information, call (888) 331-7900 or visit [www.liphatech.com](http://www.liphatech.com).