

Technical Data Sheet (TDS)

1. Product Overview

- **Product Name:** Lotilaner
- **CAS Number:** 874082-80-5
- **Molecular Formula:** C₂₇ H₂₂ClF₇ N₄O₂S
- **Molecular Weight:** 645.00 g/mol
- **Formula:** C₂₇ H₂₂ClF₇ N₄O₂S
- **Product Characteristics:** High-purity isoxazoline crystalline powder, practically odorless, slightly hygroscopic and light-sensitive. Freely soluble in organic solvents (DMSO/acetone), insoluble in water. Stable in neutral/weakly acidic, dry and dark conditions; mild decomposition in strong alkaline environment. Potent and selective acaricidal/insecticidal activity, targets arthropod GABA-gated chloride channels, fast-acting and long-lasting for flea/tick control in companion animals.

2. Technical Specifications (Complies with Industrial Standards)

Item	Specification
Appearance	White to off-white crystalline powder
Assay (Lotilaner)	≥ 98.5%
Loss on Drying	≤ 0.5%
Residue on Ignition	≤ 0.1%
Heavy Metals (Pb)	≤ 2 ppm
Heavy Metals (As)	≤ 1 ppm
Related Substances	≤ 1.0%
Melting Point	158-163°C
Total Bacterial Count	≤ 10 CFU/g
E. coli	Negative
Yeast & Mold	≤ 10 CFU/g
Particle Size	95% passing 100 mesh
Solubility in DMSO	Freely soluble
Bulk Density	1.55-1.59 g/cm ³
Photostability	≤ 0.5% related substances after 7 days (25°C, light exposure)
log P (n-octanol/water)	7.8-8.2

3. Product Advantages

1. **High Target Selectivity:** Selectively binds to arthropod GABA/glutamate-gated chloride channels, no affinity for mammalian ion channels, high safety for cats, dogs and human handlers.
2. **Fast & Long-Acting Efficacy:** Kills fleas within 24 hours and ticks within 48 hours; single administration provides 8-12 weeks of continuous protection for companion animals, breaking the parasite life cycle.
3. **Broad-Spectrum Activity:** Effective against all major flea and tick species infesting cats and dogs, with no cross-resistance to traditional acaricides/insecticides.
4. **Pharmaceutical Grade Purity:** Meets EP/USP/VICH international veterinary drug standards; ultralow heavy metal and microbial limits, suitable for GMP production of veterinary formulations.
5. **Good Formulation Compatibility:** Freely soluble in organic solvents, compatible with common veterinary excipients; easy to prepare chewable tablets, spot-on solutions and oral suspensions.
6. **Stable Storage:** 36-month shelf life under sealed, dark and dry conditions; slightly hygroscopic with no significant quality impact; stable in low-temperature pharmaceutical processing (≤60°C).

4. Application Fields

- **Veterinary Pharmaceutical Formulations:** Core raw material for cat/dog acaricidal/insecticidal chewable tablets, spot-on solutions and oral suspensions; treatment and prevention of flea (*Ctenocephalides felis/canis*) and tick (*Ixodes/Rhipicephalus*) infestations.



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- **Veterinary R&D:** Reference reagent for parasitology, arthropod pharmacology and acaricidal/insecticidal drug research; GABA channel activity test standard material.
- **Analytical Standard:** Used for veterinary drug quality inspection, chromatographic calibration and method validation in veterinary drug laboratories.

5. Usage Methods

5.1 Recommended Dosage (Veterinary Formulations)

- **Dogs:** 2-4 mg/kg body weight, single oral administration every 12 weeks; suitable for all dog breeds and weights.
- **Cats:** 1-2 mg/kg body weight, topical/oral administration every 8 weeks; safe for kittens (≥ 8 weeks old) and adult cats.

5.2 Formulation Tips

- **Chewable Tablets:** Mix Lotilaner with lactose, mannitol, animal flavor powder and microcrystalline cellulose; granulate with 5% PVP ethanol solution ($\leq 60^{\circ}\text{C}$, light protection); add magnesium stearate and compress into tablets; film coating for light stability.
- **Spot-On Solutions:** Dissolve Lotilaner in propylene glycol/vegetable oil (1:9 ratio); add antioxidant (BHT) and emulsifier (Tween 80); stir evenly under low temperature ($\leq 40^{\circ}\text{C}$, light protection); filter and fill into amber vials (aseptic operation).
- **Key Notes:** Light protection for all formulation processes; use organic solvent-based excipients (insoluble in water); avoid high temperature ($> 60^{\circ}\text{C}$) and strong alkaline environment; finished products use amber light-proof packaging.

6. Packaging & Storage

6.1 Packaging Specifications

- 100 g/bottle: Amber glass pharmaceutical bottle with aluminum foil seal (R&D/analytical use)
- 1 kg/bag: Aluminum foil vacuum bag with PE inner lining (small-batch production)
- 5 kg/25 kg/drum: HDPE brown pharmaceutical drum with aluminum foil inner lining (bulk production)
- Custom packaging (500 g/2 kg) available upon request (all light-proof and moisture-proof)

6.2 Storage Conditions

- Store in a cool, dry, dark and locked veterinary warehouse ($\leq 25^{\circ}\text{C}$, RH $\leq 60\%$); keep container tightly sealed at all times.
- Light protection mandatory for all storage and handling; avoid direct sunlight/ultraviolet light.
- Store separately from strong acids, strong bases, oxidizing agents, food, feed and aquatic products; place in a dedicated toxic/environmental hazard storage area.
- **Shelf Life:** 36 months (unopened raw powder); 24 months for finished formulations (amber packaging, $\leq 25^{\circ}\text{C}$).

6.3 Transportation

- Class 9 miscellaneous dangerous goods (Marine Pollutant); transport in sealed, light-proof, moisture-proof and shockproof containers.
- Transport temperature $\leq 30^{\circ}\text{C}$; avoid sunlight, rain, collision and extrusion during transport.
- Do not transport near water sources, or with food, feed, cosmetics and aquatic products; transport in a dedicated compartment of hazardous chemical vehicles.
- Comply with local/international Class 9 transport regulations; provide MSDS/COA/transport approval documents for customs clearance.

7. Safety & Protection

- The product is a veterinary pharmaceutical raw material with mild human toxicity and severe aquatic environmental hazard; all operations must be conducted by trained professional personnel with full PPE (N95 dust mask, safety goggles, nitrile gloves, impermeable lab coat).
- Avoid eye/skin/respiratory tract contact; operate in a well-ventilated dust-free fume hood with light protection; monitor hepatic/renal function for prolonged handling personnel.
- Strictly prevent product contact with water sources and aquatic environments; collect all production waste/cleaning water for professional hazardous waste disposal, no environmental discharge.