YOU NEED CHOICES.
Elanco now brings you a comprehensive line of cattle vaccine health management solutions for your operation.

Titanium® 5 + PH-M
Single-vaccine solution protects against BRD-causing viruses & bacteria at every stage of production*

*Approved for cattle 60 days of age or older
The first BVD type 2 MLV vaccine, Titanium® has become well-known for helping protect stocker and feeder cattle against respiratory disease.

Research cited below shows Titanium brand vaccines:

- Did not affect feed intake²
- Did not cause post-vaccinal stress as measured by body temperature, feed intake, injection-site reaction and white blood cell counts²,3,4,6
- Are safe to use in nursing calves and during pregnancy⁷
- Did not affect milk production¹

In fact, studies document that the portfolio of Titanium vaccines protects against BVD, types 1a and 2 (Figure 1), IBR, PI3, BRSV and five strains of Leptospira, including L. hardjo-bovis — common pathogens that cause costly respiratory and reproductive disease.³,⁵,⁸,⁹,¹⁰

Titanium’s MLV combination vaccines provide this protection quickly by stimulating cell-mediated immunity (Figure 2).

**Now, the convenience of whole-herd protection**

With USDA’s approval of four combination vaccines for nursing calves and pregnant cows, Titanium brand vaccines now can protect your whole herd against costly disease pathogens. Be sure to follow label and use directions.

**Figure 1. BVD type II challenge study — clinical signs⁴**

![Clinical signs mean score graph](image)

**Figure 2. IBR study — post-vaccinal cell-mediated immunity⁹**

![T-helper lymphocyte interleukin-2 receptor level expression index (EI) graph](image)

*See reference guide on back cover

Four Titanium combinations are now USDA-approved for use in pregnant cows and nursing calves:

- Titanium 5 + PH-M
- Titanium 5 L5 HB
- Titanium 5
- Titanium 4 L5

The portfolio of nine Titanium MLV vaccines provides proven protection against respiratory and reproductive viruses. Several combinations are now approved for use in pregnant cows and nursing calves (see product names below).
Protects against the two bacteria most associated with BRD:\(11,15\)
- *Mannheimia haemolytica* — the bacterium most frequently isolated from lungs of cattle with BRD
- *Pasteurella multocida* — an important cause of bacterial pneumonia

And five economically important virus strains:\(12,13\)
- BVD, types 1 and 2
- PI\(_3\)
- IBR
- BRSV

Contains a research-proven *M. haemolytica* leukotoxoid and other antigens to stimulate an immune response to BRD-causing viruses and bacteria.

Includes a low-reactive\(14\), water-soluble adjuvant, and is proven safe for cattle as young as 2 months of age.

**Proven effective and safe at every stage of production\(^*\)**

Evaluated under USDA requirements, Titanium 5 + PH-M was proven safe and effective for cattle at all stages of production, with no interference between the viral and bacterial components of the vaccine. Research comparing vaccinated calves to controls after infection with *M. haemolytica* showed Titanium 5 + PH-M:\(11\)
- Reduced lung lesions\(^1\) by 82% \((P < 0.01)\)
- Reduced clinical signs of infection significantly \((P < 0.01)\)

Studies also showed Titanium 5 + PH-M:
- Provided the same viral protection (BVD, types 1 and 2, IBR, PI\(_3\), BRSV) as Titanium 5\(12,13\)
- Protected against severe clinical signs of BRD\(11,12,13\)
- Resulted in no adverse events beyond minimal injection-site swelling\(14\)

\(^*\)Approved for cattle 60 days of age or older

\(^1\)Mitigated fraction: the effect of a vaccine in reducing severity of disease
Cow-calf and dairy producers alike depend on Master Guard® brand vaccines to protect against common reproductive and respiratory pathogens in pregnant and open cattle.*

To deliver effectiveness and reproductive safety, Master Guard features killed antigens for BVD, types 1a and 2, and IBR (see Figure 5 for duration-of-immunity research). The two MLV components — the same as found in Titanium — enhance cattle's cell-mediated immune response for BRSV (Figure 6) and PI3.

**Lepto** antigens add even more reproductive protection

Master Guard 10 HB also provides protection against five species of *Leptospira* spirochetes, including *L. hardjo-bovis*, the most common species of *Leptospira* found in the United States.

**Master Guard vaccines:**
- Do not affect milk production‡16
- Can be given to cows and heifers at any stage of gestation
- Allow the convenience of whole-herd vaccination in cattle 5 months of age and older

Trust Master Guard brand vaccines to provide the reproductive safety you want, and the protection you need against key reproductive and respiratory pathogens.*

‡No statistical difference during nine-day duration of study
*See reference guide on back cover

![Figure 5. IBR challenge study — clinical signs](image)

![Figure 6. BRSV study — post-vaccinal cell-mediated immunity](image)

Master Guard vaccines contain a unique combination of killed and MLV components to provide disease protection that’s proven safe and effective in cattle10 — including pregnant cows and nursing calves.

Master Guard offers the safety of a killed vaccine (BVD types 1 and 2, IBR) with the performance of a modified-live vaccine (PI3, BRSV).
When to use — vaccines from Elanco are designed to offer the protection you need, when and where you need it.

While following label directions, work with your veterinarian to determine the best way to incorporate these trusted vaccines into your herd-health protocols.

### General use guidelines

#### When bringing cows and replacement heifers with an unknown health history into your herd:
1. Vaccinate upon arrival
2. Revaccinate in two to four weeks

#### The full value of a true partnership

Equipped with a full line of disease treatment, prevention and control solutions, you can count on your Full Value Beef™ experts at Elanco to help you make informed health management decisions. By establishing a strong foundation in data analytics and helping you identify the economic factors that have the biggest impact on your bottom line, you and your Elanco representative can work together to discover meaningful profit opportunities.
For all products: The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions. Do not vaccinate within 21 days of slaughter.

Precautions: Do not use Titanium BRSV 3, Titanium 3 LP, Titanium 3, Titanium IBR LP and Titanium IBR in pregnant cows or in calves nursing pregnant cows. Abortions may result.

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