

# Tech Specs

Elanco

**Titanium**<sup>®</sup>

## Titanium<sup>®</sup>

Comprehensive Protection Against Pathogens That Cause Respiratory, Reproductive and Leptospirosis Diseases

**Tough on Viruses. Easy on Cattle.\***  
Ideal for Your Bottom Line.

Titanium vaccines are tough on common respiratory and reproductive disease pathogens but easy on your cattle.\*

Titanium vaccines have provided Bovine Respiratory Disease (BRD) and reproductive disease protection to millions of cattle on operations with more than 200 million doses used over the last 20+ years.<sup>1</sup>

### TOUGH ON VIRUSES

- Proven protection against Bovine Viral Diarrhea (BVD) Type 1 and 2<sup>2,3</sup>
- Strong Infectious Bovine Rhinotracheitis (IBR) immunity during 110-day challenge<sup>4</sup>

### EASY ON CATTLE\*

- Animals can stay on feed and maintain production
  - No significant effect on feed intake<sup>5</sup>
  - No significant effect on milk production<sup>6</sup>
  - No post-vaccinal stress<sup>7,8</sup>
- A variety of options available for vaccination of nursing calves and pregnant cows

### TITANIUM VACCINE OPTIONS

	BVD Type 1	BVD Type 2	IBR	PI <sub>3</sub>	BRSV	<i>L. canicola</i>	<i>L. grippityphosa</i>	<i>L. hardjo-prajitno</i>	<i>L. icterohaemorrhagiae</i>	<i>L. pomona</i>	<i>L. hardjo-bovis</i>
<b>Titanium IBR</b>			MLV								
<b>Titanium IBR LP</b>			MLV								■
<b>Titanium 3</b>	MLV	MLV	MLV								
<b>Titanium BRSV 3</b>			MLV	MLV	MLV						
<b>Titanium 3 LP</b>	MLV	MLV	MLV								■
<b>Titanium 4 L5</b>	MLV	MLV	MLV	MLV		■	■	■	■	■	
<b>Titanium 5</b>	MLV	MLV	MLV	MLV	MLV						
<b>Titanium 5 L5 HB</b>	MLV	MLV	MLV	MLV	MLV	■	■	■	■	■	**

MLV = Modified Live Virus

\*\**L. hardjo-bovis* cross-protection provided through *L. hardjo-prajitno* antigen

### TITANIUM 5 L5 HB

**INDICATIONS:** Titanium 5 L5 HB contains BVD Type 1 and 2 and is recommended for the vaccination of healthy cows and heifers, no less than 30 days prior to breeding, as an aid in the prevention of disease caused by Bovine Viral Diarrhea (BVD) Type 1 and 2, Infectious Bovine Rhinotracheitis (IBR), Bovine Parainfluenza<sub>3</sub> (PI<sub>3</sub>), Bovine Respiratory Syncytial Virus (BRSV) and *Leptospira borgpetersenii* serovar hardjo-bovis and *Leptospira canicola-grippityphosa-hardjo-icterohaemorrhagiae-pomona*.

**Titanium 5 L5 HB may be administered to pregnant cattle provided they were vaccinated, according to label directions, with Titanium 3, Titanium 4 L5, Titanium 5 or Titanium 5 L5 HB 30 to 60 days prior to breeding. Titanium 5 L5 HB may also be administered to calves nursing pregnant cows provided their dams were vaccinated as described above.**

**DIRECTIONS AND DOSAGE:** Rehydrate the desiccated vial with accompanying diluent and shake well. Inject 2 mL subcutaneously using aseptic technique, followed by a second dose of monovalent Bovine Respiratory Syncytial Virus vaccine (Titanium BRSV) to be given 14 to 28 days after the first dose. Annual revaccination is recommended. Calves vaccinated before weaning should be revaccinated 30 days after weaning when the possible influence of maternal antibodies is decreased.

**CAUTION: Recommended for the vaccination of healthy cows and heifers no less than 30 days prior to breeding. Titanium 3, Titanium 4 L5, Titanium 5 or Titanium 5 L5 HB can also be administered to pregnant cattle provided they were vaccinated, according to label directions, with Titanium 3, Titanium 4 L5, Titanium 5, or Titanium 5 L5 HB 30 to 60 days prior to breeding. Failure to follow label directions may result in abortions. The Titanium line may be administered to calves nursing pregnant cows provided their dams were vaccinated as described above. Store at 35° to 46° F (2° to 8° C). DO NOT FREEZE.**

Allergic reactions may follow the use of vaccine. ANTIDOTE: Epinephrine. Do not vaccinate within 21 days before slaughter. Use entire contents when first opened. Burn container and all unused contents. Contains thimerosal as a preservative.

## TECHNICAL DISEASE INFORMATION

The combined cost of BRD (death loss, reduced performance, treatment, labor resources) makes it the costliest disease affecting cattle in the U.S.<sup>9</sup> Weight gain and performance is often limited in calves with BRD and may have negative effects on long-term performance and herd profitability. Preventing BRD and associated co-infectors—such as BVD Type 1 and 2, as well as IBR—through effective vaccination can reduce the incidence of calf pneumonia and death loss. Vaccinating ahead of times of potential stress can be an effective prevention program.

Reproductive diseases caused by pathogens like leptospirosis are detrimental to the success and profitability of producers because of decreased reproductivity, weight loss, decreased milk production and performance, and sometimes death.

### **BOVINE VIRAL DIARRHEA (BVD)**

BVD is often obscured or confused with other conditions of the respiratory disease complex. Clinical signs include fever, anorexia, coughing, depression, diarrhea and occasional lameness. BVD may be inapparent, chronic or a fatal mucosal disease. BVD may cause suppression of the immune system. Affected animals have increased susceptibility to secondary infections. BVD in pregnant animals may cause abortions or malformed and weak calves at birth. Chronic disease with ulcers on the alimentary tract is referred to as “Mucosal Disease” and is usually fatal.

### **INFECTIOUS BOVINE RHINOTRACHEITIS (IBR)**

IBR is an acute respiratory disease. Signs of IBR may include elevated temperature, excessive nasal and ocular discharge, rapid breathing, coughing and depression. Reproductive problems including abortions have been observed.

### **BOVINE PARAINFLUENZA<sub>3</sub> (PI<sub>3</sub>)**

PI<sub>3</sub> infections may cause few noticeable signs. Disease signs caused by PI<sub>3</sub> virus generally appear within 14 days after shipment and arrival of calves at their destination. Signs are weakness, depression, watery to mucopurulent nasal discharge, fever, coughing and weight loss. PI<sub>3</sub> is a contributor to the BRD Complex. Antibodies are present in over 80% of young calves.

### **BOVINE RESPIRATORY SYNCYTIAL VIRUS (BRSV)**

BRSV infections occur in dairy and beef cattle of all ages, including nursing calves. BRSV signs follow an incubation of 5 to 7 days. Infected calves and adult animals exhibit signs of acute respiratory disease that may include fever, coughing, rapid breathing, subcutaneous edema of the throat and neck, depression, nasal discharge, ocular discharge, anorexia, pulmonary edema and emphysema. BRSV may predispose cattle to secondary infections, particularly bacterial pneumonia. In an acute outbreak, sudden death has been reported. Enzootic pneumonia of dairy calves associated

with BRSV may occur at 10 days of age. BRSV signs vary in severity but may rapidly progress to a crisis phase. Recovery of adult animals is rapid and usually uneventful.

Diagnosis is difficult both in the field and laboratory. After the animal exhibits signs of disease, the virus usually is not isolated. Paired serum samples may assist in determining existing herd infections. Surveys indicate BRSV antibodies are present in over 90% of calves in North America.

### **LEPTOSPIRA CANICOLA-GRIPPOTYPHOSA-HARDJO-ICTEROHAEMORRHAGIAE-POMONA**

Leptospirosis is widespread in the animal population of the United States and is considered one of the most infectious diseases of farm animals.

Humans can become infected either from animals with the disease or from an infective environmental source. In animals, the disease is known to cause reproduction disorders, loss of weight, decreased milk production and sometimes death. The economic losses suffered are very large. The disease can be caused by several specific leptospires.

Five important serovars have been identified and are included in this product: *L. canicola*, *L. grippotyphosa*, *L. hardjo-prajitno*, *L. icterohaemorrhagiae* and *L. pomona*.

Because specific serovar diagnosis is very difficult, and also due to the widespread nature of potential infection, it is recommended that all animals be vaccinated before introduction into the concentrated holding areas currently utilized on many premises. When infection is diagnosed, it is advisable to separate those animals showing disease signs and to vaccinate the remainder of the herd with Lepto Shield® 5 alone. The apparent effectiveness of Lepto Shield 5 will depend upon the number of animals exposed and incubating the disease at the time of vaccination. Vaccination cannot be expected to protect animals already in the incubating stages of the disease.

Serologic studies indicate widespread distribution of all of these causative agents.

**To learn more about Titanium® contact your herd health veterinarian, Elanco sales representative or technical consultant, or visit [Elanco.us](http://Elanco.us)**

**The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions.**

\*As measured by body temperature, feed intake, injection-site reaction or white blood cell count.

<sup>1</sup> Elanco Animal Health. Data on file.

<sup>2</sup> Elanco Animal Health. Data on file.

<sup>3</sup> Elanco Animal Health. Data on file.

<sup>4</sup> Elanco Animal Health. Data on file.

<sup>5</sup> Elanco Animal Health. Data on file.

<sup>6</sup> Elanco Animal Health. Data on file.

<sup>7</sup> Elanco Animal Health. Data on file.

<sup>8</sup> Elanco Animal Health. Data on file.

<sup>9</sup> Griffin D. Economic impact associated with respiratory disease in beef cattle. *Vet Clin North Am Food Animal Pract* 1997;3:367-77.

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The Elanco logo consists of the word "Elanco" in a white, sans-serif font, positioned inside a blue parallelogram that is tilted to the right.