ELANCO CATTLE VACCINE PORTFOLIO
The Vira Shield® line of inactivated vaccines provides flexible, safe and powerful protection against up to 13 respiratory, reproductive and leptospirosis diseases. Easy to implement in any management program or whole-herd protocol, Vira Shield 6 combinations can be safely used in pregnant cows, heifers and calves nursing pregnant cows. A vaccine brand of choice for pregnant females, Vira Shield has a leading reputation for reproductive safety and peace of mind.

Research shows Vira Shield vaccines:
- Deliver enhanced infectious bovine rhinotracheitis (IBR) fetal protection eight months post-vaccination
- Provide 12-month duration of immunity for LHB, the most common cause of leptospirosis in the U.S.
- Help prime the immune system of young calves even in the face of antibodies from the cow’s colostrum

Vira Shield also contains the Xtend® adjuvant, which helps boost general immune response and release antigens over time.

**Figure 1. Respiratory Clinical Scores Following Bovine Viral Diarrhea Virus (BVDV) Challenge**

Keeping cattle healthy throughout their lives is critically important to their performance and your bottom line. That’s why Elanco is dedicated to expanding its vaccine portfolio to ensure the health needs of your cattle can be met — at every stage of production, no matter your operation’s needs.

We want to help you keep cattle healthy, which is why we continue our investments in research and development. Meeting your needs by delivering:
- A new vaccine research and development facility
- Technological advancements to existing production sites
- Highly qualified experts added to our existing technical and consulting teams

This is just a small fraction of the work being done to ensure we can help you stay profitable.

**VIRA SHIELD® — protection against 13 diseases**

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We want to help you keep cattle healthy, which is why we continue to invest in technological advancements, talented people, consultant, production and research teams and offer a broad, innovative portfolio of health management solutions. These continued innovations can be seen in many ways:

- A new vaccine research and development facility
- Technological advancements to existing production sites
- Highly qualified experts added to our existing technical consultant, production and research teams

This is just a small fraction of the work being done to ensure we offer a broad, innovative portfolio of health management products to help you stay profitable.

— a dose of confidence

Titanium® vaccines are tough on respiratory and reproductive disease pathogens — but easy on your cattle. Titanium does not impact feed intake and results in little to no post-treatment side effects, so you can keep cattle on track with health management solutions that do not interrupt your day-to-day operations or affect your bottom line.6*

<table>
<thead>
<tr>
<th>Table 1. Impact of Titanium 5 on mean dry-matter intake (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days post-vaccination</td>
</tr>
<tr>
<td>Days 1-4</td>
</tr>
<tr>
<td>Days 1-5</td>
</tr>
<tr>
<td>Days 1-10</td>
</tr>
<tr>
<td>Days 1-29</td>
</tr>
</tbody>
</table>

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

Research shows that Titanium vaccines:
- Do not affect feed intake6
- Do not cause post-vaccinal stress as measured by body temperature, feed intake, injection-site reaction or white blood cell count (Table 1)5-9
- Are safe for use in nursing calves and during pregnancy provided they were vaccinated according to label directions with Titanium 3, 4 L5, 5 or 5 L5 HB10**
- Do not affect milk production11

Single vaccine with protection against viruses and bacteria
Titanium 5 + PH-M, the newest Titanium vaccine, helps cattle overcome the one-two punch of bacteria and viruses. This innovative product provides a broad immune response against the bacteria and viruses most associated with bovine respiratory disease (BRD) in a single vaccine for cattle as young as 2 months of age.12-15

Titanium 5 + PH-M protects against economically important virus strains, as well as the two bacteria most associated with BRD:12-14, 16
- **Mannheimia haemolytica** — the bacterium most frequently isolated from lungs of cattle with BRD
- **Pasteurella multocida** — an important cause of bacterial pneumonia

Research shows that the vaccine is safe and effective for cattle 60 days of age or older with no interference between the viral and bacterial components of the vaccine.
SCOUR BOS® — powerful scours protection at preg-check

Scour Bos® is the only scours vaccine that delivers powerful protection with the convenience and flexibility to administer at preg-check. Scours, or calf diarrhea, is a common result of bacterial and viral infections in the lining of calves’ intestines. Calves are especially vulnerable because they face many stressors in the first few hours of life and their young immune systems have not yet fully developed.

Scour Bos provides broad-spectrum flexible protection, including:
- Protection against the primary causes of scours — coronavirus, rotavirus, K99 E. coli bacteria and Clostridium perfringens Type C
- Three-way rotavirus protection
- More E. coli isolates than any other scours vaccine
- The longest vaccination window of any scours vaccine — up to 16 weeks pre-calving†

<table>
<thead>
<tr>
<th>Table 2. Scour Bos E. coli challenge results17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
</tr>
<tr>
<td>Vaccinates&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Controls&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>P < 0.001.

Table 3. Rotavirus challenge results18,19

<table>
<thead>
<tr>
<th>Vaccinates’ geometric mean titer</th>
<th>Dehydration difference</th>
<th>Depression difference</th>
<th>Clinical difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calf serum</td>
<td>9x increase over controls</td>
<td></td>
<td>P &lt; 0.01</td>
</tr>
<tr>
<td>Dam colostrum</td>
<td>7x increase over controls</td>
<td></td>
<td>P &lt; 0.01</td>
</tr>
</tbody>
</table>

16-week vaccination window for initial vaccination. In subsequent years, administer up to 10 weeks pre-calving.

CONVENIENT, FLEXIBLE VACCINATION WINDOW WITH SCOUR BOS

INITIAL VACCINATION FLEXIBILITY (WEEKS PRIOR TO CALVING)

- Scour Bos® 9 up to 16 weeks
- ScourGuard® 4KC up to 9 weeks
- Guardian® up to 12 weeks

ANNUAL VACCINATION FLEXIBILITY (WEEKS PRIOR TO CALVING)

- Scour Bos® up to 10 weeks
- ScourGuard® up to 6 weeks
- Guardian® up to 7 weeks
**NUPLURA PH**

- The first-ever pneumonia vaccine developed for cattle in the U.S. market using recombinant technology, which means you’re getting the purest antigen form available.

**Fusogard®**

- An effective footrot protection strategy with a broad window of administration that contains the only *Fusobacterium necrophorum* bacterin designed specifically for cattle.

**Pinkeye Shield®**

- A pinkeye vaccine that contains four field isolates of *Moraxella bovis*, the primary cause of pinkeye.

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### Recommended protocols to meet your operation’s needs

Below are some suggested protocols to fit into your health management program. Work with your veterinarian to ensure you’ve chosen the best protocols for your operation.

<table>
<thead>
<tr>
<th>Disease Segment</th>
<th>Calves</th>
<th>Heifers</th>
<th>Cows</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Branding/Turnout</strong></td>
<td><strong>Preweaning</strong></td>
<td><strong>Weaning</strong></td>
<td><strong>Prebreeding</strong></td>
</tr>
<tr>
<td><strong>Respiratory</strong></td>
<td>Titanium 5+PH-M</td>
<td>Titanium 5+PH-M</td>
<td>Titanium 5+PH-M</td>
</tr>
<tr>
<td><strong>Reproductive (replacement females)</strong></td>
<td>Vira Shield 6</td>
<td>Vira Shield 6</td>
<td>Vira Shield 6</td>
</tr>
<tr>
<td><strong>Scours</strong></td>
<td>Scour Bos 9</td>
<td>Scour Bos 4</td>
<td>Scour Bos 9</td>
</tr>
<tr>
<td><strong>Pneumonia</strong></td>
<td>NUPLURA PH</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Footrot</strong></td>
<td>Fusogard (2 doses)</td>
<td>Fusogard (2 doses)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disease Segment</th>
<th>Bulls</th>
<th>Stocker</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Turnout</strong></td>
<td>Titanium 5+PH-M</td>
<td>Titanium 5+PH-M</td>
</tr>
<tr>
<td><strong>Arrival</strong></td>
<td>Titanium 5+PH-M</td>
<td>Titanium 5+PH-M</td>
</tr>
<tr>
<td><strong>Revaccinate (2-4 weeks)</strong></td>
<td>Titanium 5</td>
<td>Titanium 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disease Segment</th>
<th>Feedyard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arrival</strong></td>
<td>Titanium 5+PH-M</td>
</tr>
<tr>
<td><strong>Revaccinate (2-4 weeks)</strong></td>
<td>Titanium 4 L5</td>
</tr>
<tr>
<td><strong>Reimplanting</strong></td>
<td>Titanium 3</td>
</tr>
</tbody>
</table>

**Calf Diarrhea (Scours)**

- Bovine Ecolizer®
- Bovine Pili Shield®
- Scour Bos

**Clostridial**

- Clostratox®
- Clostri Shield®
- Clostridium Perfringens Type A Toxoid

**Other**

- Pinkeye Shield®
- Fusogard®
Discovering opportunities to improve profitability

Whether it’s a new vaccine or the quality products you’ve come to depend upon, Elanco provides you with the added support of Full Value Beef™. In addition to a full line of health management solutions and a technical team to help you make informed decisions, Elanco also has analytics experts ready to help you identify the economic factors that create more profit opportunities for your operation. For more information, talk to your Elanco sales representative or technical consultant.

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

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**For Titanium:** 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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2. Chase C. 1995. “Protection with an inactivated vaccine against IBR, BRSV and BVDV.” Paper presented at: Annual meeting of the American Association of Bovine Practitioners. San Antonio, TX. Vira Shield has no approved claim for duration of immunity for Type 2 BVD
8. Terhaar, B. “Effect of vaccination with Titanium 5.” Study No. TR-11. Published by Agri Laboratories Ltd.
12. Milliken, G. 2013. “Mannheimia haemolytica efficacy studies demonstrating the absence of excessive interference of Titanium products with the Mannheimia haemolytica-Pasteurella multocida bacterin-toxoid.”
13. Demonstration of the compatibility of components between APHIS product codes 1181.20 (Establishment 213) and G935.04 (Establishment 315) APHIS product code 45B9.20.” Study No. 2010-01 Rev. 1.
18. Bovine Rotavirus Host Animal Efficacy Study VRD 99001 (IM Claim) Notebook 358. 0 DPC.

Elanco®, Ecolizer®, Pili Shield®, Clostrarox®, Clostri Shield®, Full Value Beef™, Fusogard®, Lepto Shield®, Master Guard®, NUPLURA®, Pinkeye Shield®, Quick Shield®, ReproSTAR®, Scour Bos®, Somnu Shield®, Titanium®, Vib Shield®, Vira Shield®, Xend® and the diagonal bar are trademarks owned or licensed by Eli Lilly and Company, its subsidiaries or affiliates.

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