

Protect your line. Protect the chain.

Effective hygiene protects your manufacturing line and your bottom line. Moreover, it helps protect the food chain the world relies on.

Eastman KEITEX™
feed hygiene enhancer



HOW DO YOU ENSURE THE HYGIENE OF YOUR **FEED RAW MATERIALS?**

Maintaining high levels of hygiene in feed raw materials such as soya, rapeseed, and sunflower requires a relentless effort to minimize the risk of pathogen transmission to feed. Protecting these materials along the entire production line and supply chain—without sacrificing nutrition and

palatability—is crucial to the overall well-being of animals, workers, and consumers.

Eastman Keitex™ LF1 feed hygiene enhancer delivers effective protection against harmful pathogens—including *Salmonella*, *E. coli*, and other enterobacteria.



WHAT DOES **KEITEX LF1 OFFER?**

GREATER PROTECTION

As a preventive or post-contamination treatment against *Salmonella* and other harmful pathogens, Keitex LF1 can help mitigate disruptions to production and reduce sanitation and storage costs. Keitex LF1's anhydrous composition also protects against metal corrosion better than buffered and unbuffered solutions on the market, and its moderate application rate hasn't shown any adverse effect on the palatability of the final feed product.

INCREASED PRODUCTIVITY

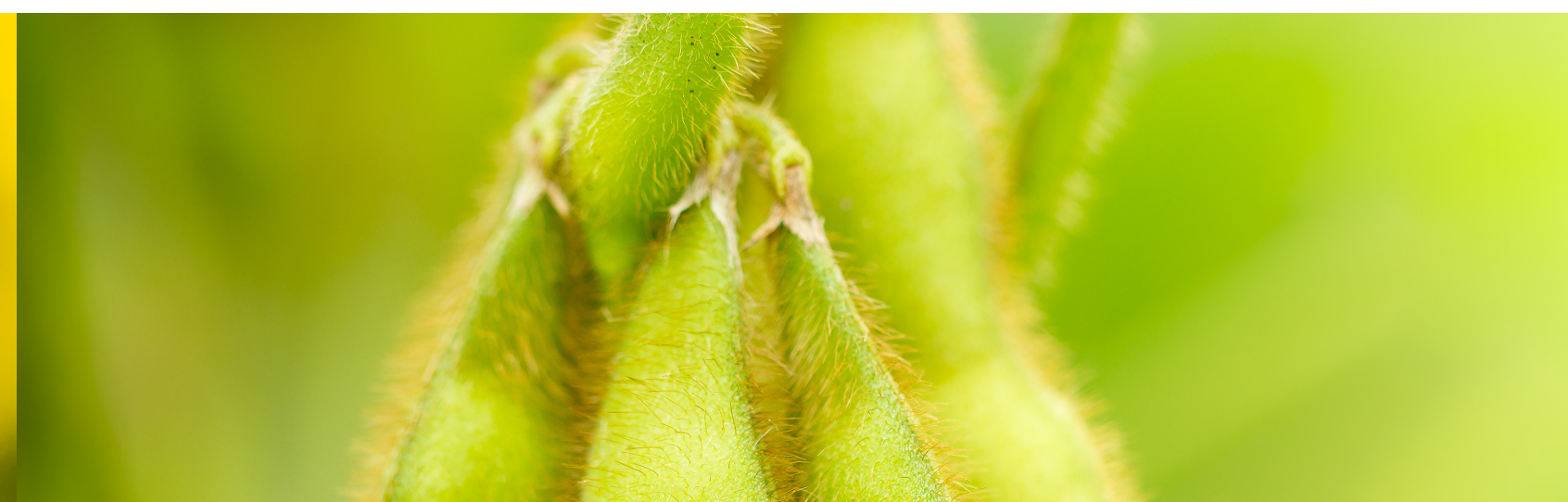
Keitex LF1 minimizes the presence of pathogens in feed materials, demonstrating a statistically significant reduction in bacteria levels. With a combination of organic acids, short- and medium-chain fatty acids, and other bioactive ingredients, it enables synergies in pathogen control, providing effective and targeted treatment with a moderate application rate. With this increased efficiency, feed raw material producers can see a decrease in the number of treatments needed and, as a result, reduced storage and waiting time.

UNCOMPROMISED SAFETY

Whereas single organic acids alone are not efficient enough to offer a viable alternative to formaldehyde or other materials of concern, the synergistic nature of Keitex LF1 organic blend has proven effective in *Salmonella* control, providing a broader antimicrobial spectrum.

WHY KEITEX LF1?

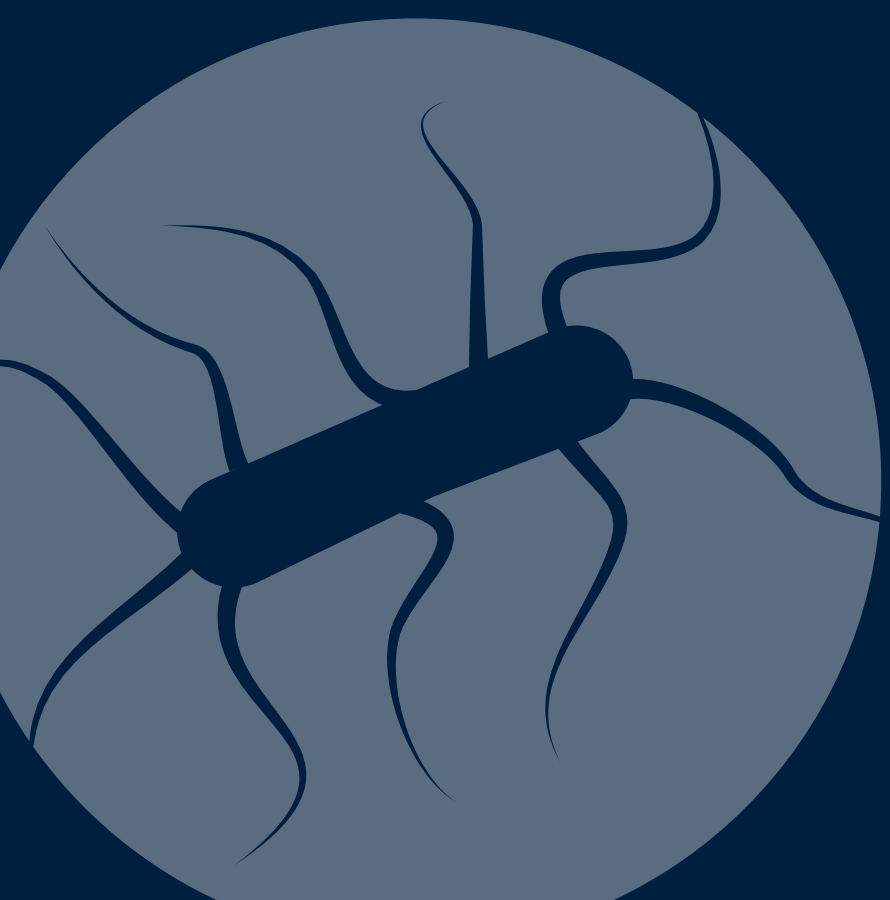
- Protects against harmful pathogens, delivering high performance against *Salmonella* in high-risk feed raw materials
- Synergistically enhances feed hygiene, sanitation, and preservation
- Safe for equipment due to lower metal corrosion rate
- Provides a viable alternative to formaldehyde or other materials of concern



PROVEN PROTECTION FROM SALMONELLA IN CONTAMINATED FEED RAW MATERIALS

Designed to penetrate a broad spectrum of pathogenic gram-negative and gram-positive bacteria, Eastman Keitex LF1 feed hygiene enhancer is specially formulated to synergistically provide proven and prolonged protection against *Salmonella* in high-risk vegetable feed materials.

When applied to feed raw materials, Keitex LF1 has the right properties to lower the pH in the feed (acidifying) as well as an antimicrobial effect at the cellular bacteria level. It delivers a 3-log reduction in *Salmonella typhimurium* counts and prolonged protection that safeguards against recontamination.



This formulation based on organic acids works selectively to preserve good bacteria, such as those that produce lactic acid, which is beneficial in maintaining animal health and performance.

Figure 1. Effectiveness in contaminated rapeseed meal in vitro on day 3 after application at a 1% rate

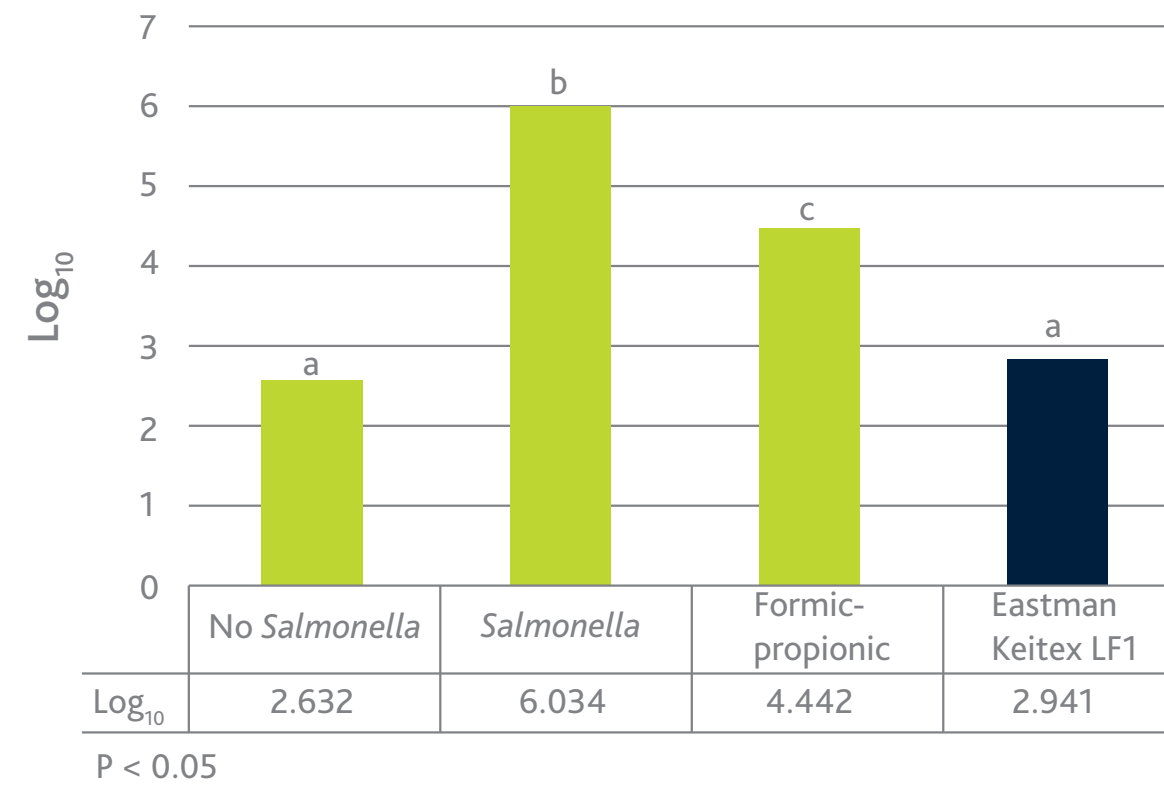


Figure 2. Effectiveness in strongly contaminated rapeseed meal in vitro on days 1, 3, and 5 after application at a 0.8% rate

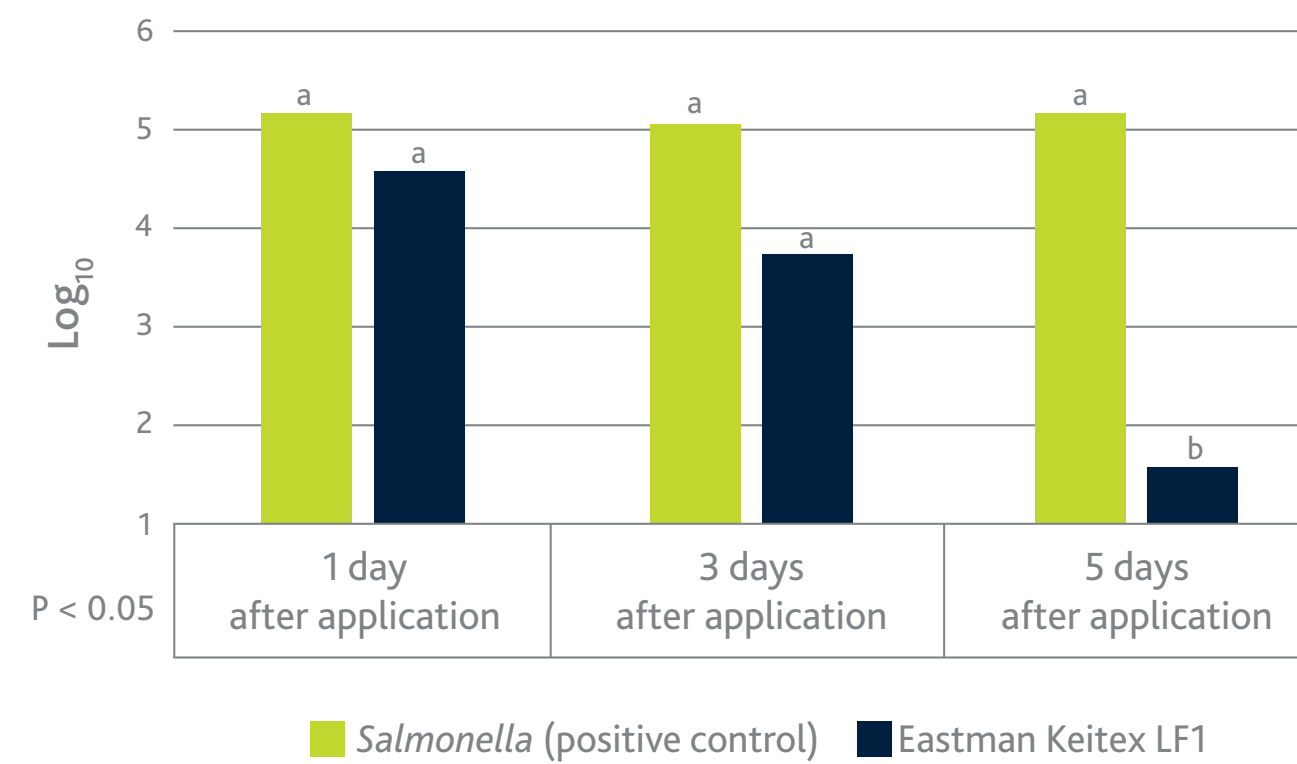


Figure 3. Keitex LF1 low corrosion rate provides a prolonged life for equipment.

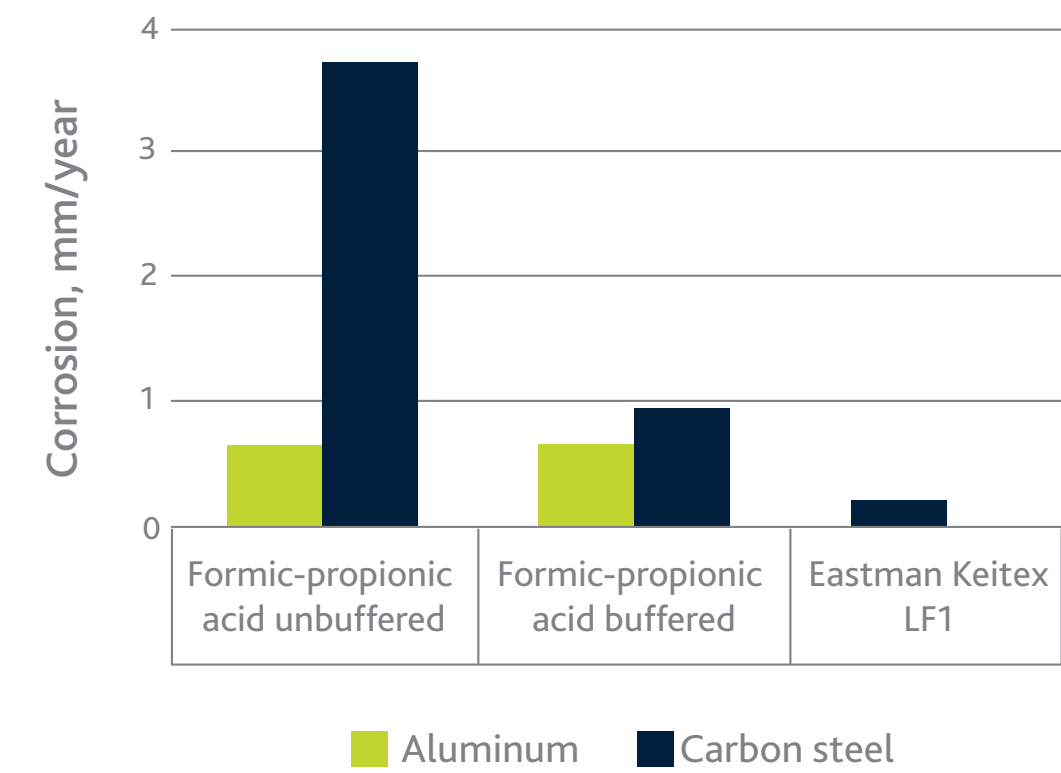
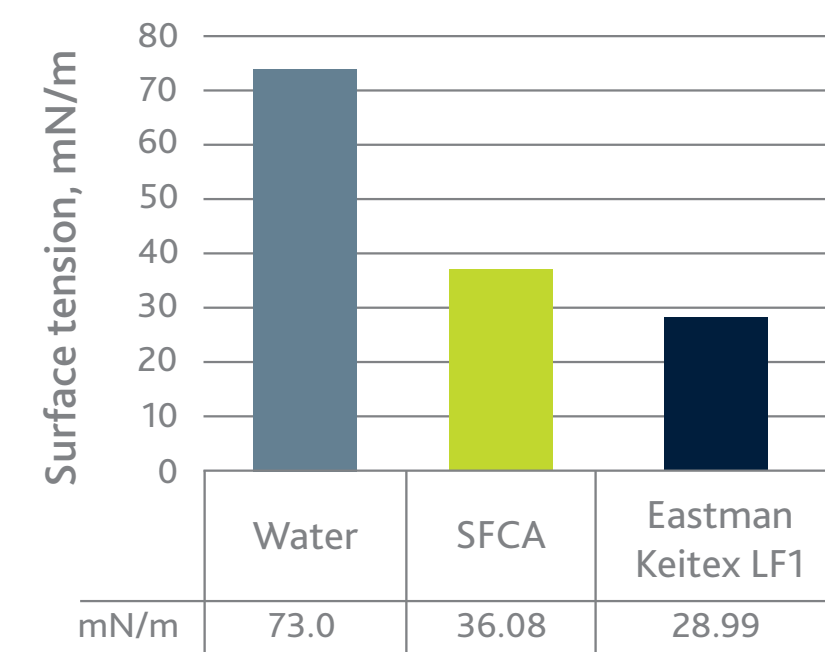


Figure 4. Keitex LF1 has low surface tension property compared to short-chain fatty acids.



NOTE: Although we have global manufacturing and supply chain capabilities, all products may not be available in all regions. Certain statements and claims may not be applicable in all regions. For further information, contact your Eastman Animal Nutrition representative.



PROTECTING THE SUPPLY CHAIN, KEITEX LF1 PROVES TO BE EFFECTIVE IN SITU.

During routine harbor inspections, *Salmonella* is often detected in imported feed materials, which then might need to be quarantined until proven to be pathogen free. To address such circumstances, Eastman Keitex LF1 has proven to be a powerful tool in reducing *Salmonella* in different protein materials such as rapeseed cake, rapeseed meal, and sunflower meal.

In recent real-life cases, Keitex LF1 was applied at a rate of 8–10 kg/ton (0.8%–1%); after the application, sampling and analysis took place according to official control protocols. Out of hundreds of samples taken per quarantined feed raw material batch, none tested positive for *Salmonella*. As a result, our customers didn't experience any delay in the release of their protein feed materials for delivery and processing.

LET'S TALK ABOUT EFFECTIVE PATHOGEN CONTROL.

The world depends on you to effectively minimize the risk of pathogens in the food chain. Eastman Keitex LF1 feed hygiene enhancer is a valuable tool in protecting your reputation, products, and personnel.

To learn more or to schedule a visit, contact animalnutrition@eastman.com or go to eastman.com/animalnutrition.

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