



# CholiPEARL®

RUMEN PROTECTED  
CHOLINE FOR DAIRY



[KEMIN.COM/CHOLIPPEARL](https://www.kemin.com/cholipearl)  
1-800-752-2864

## WHAT IS CholiPEARL?

CholiPEARL® is a cost-effective source of rumen protected choline manufactured using the MicroPEARLS® spray freezing process. This manufacturing method results in a product that combines rumen protection with high intestinal digestibility, resulting in one of the most cost-effective sources of intestinally available choline on the market.

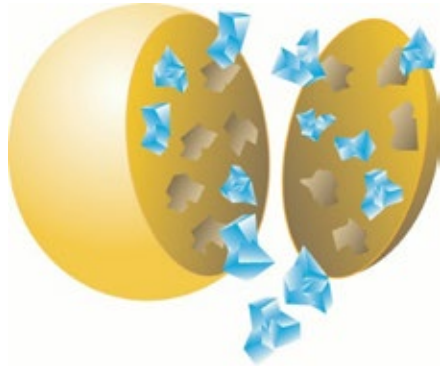


Figure 1. MicroPEARL structure

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## PRODUCT FEATURES & BENEFITS

- High intestinally bio-available source of choline
- Easily incorporates into feeding matrix as a top dress or within supplement
- Durable MicroPEARL which can handle mixing and pelleting with no negative impact on product efficacy
- Reduced inclusion rate compared to competitor products, while maintaining efficacy<sup>1</sup>
- Feeding Rate: 25 - 30 grams/head/day

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## WHY IS BIOAVAILABILITY IMPORTANT?

Bioavailability is the amount of nutrient absorbed by the cow in a form that can be used for metabolism. Essentially, higher bioavailability means you are getting what you pay for!

**CholiPEARL DELIVERS.  
PROVIDING ENERGY TO YOUR TRANSITION  
COWS WHEN THEY NEED IT MOST.**

References:

1. Kemin Internal Document: 13-00005

**KEMIN**

## WHEN SHOULD RUMEN PROTECTED CHOLINE BE FED?

During the transition period, an increase in energy demand for milk production, leads to a state of negative energy balance. To overcome this imbalance, body fats are mobilized in the form of non-esterified fatty acids (NEFA). Ideally, NEFA are transformed into very low-density lipoproteins (VLDL) in the liver to be readily absorbed as energy by the various body tissues. If NEFA cannot package into VLDL, it is stored as fat in the liver or converted to ketone bodies. This leads to ketosis and performance reductions.

## WHY IS CHOLINE IMPORTANT IN DAIRY NUTRITION?

One of the primary roles of choline is the synthesis of phosphatidylcholine in the liver.<sup>1</sup> Phosphatidylcholine is a key component in the process of packaging NEFA into VLDL so they can exit the liver, instead of being stored in the liver as fat.<sup>2</sup> Therefore, choline supplementation in dairy cattle can alleviate the severity and incidences of fatty liver.

## WHY SHOULD WE PROTECT CHOLINE?

Due to the rumen environment, very little dietary choline escapes ruminal degradation. Up to 98 percent of non-protected choline is degraded in the rumen.<sup>1</sup> So without protection, the benefits of choline supplementation in dairy cattle are not realized.

# GET YOUR MONEY'S WORTH WITH A PROVEN RUMEN PROTECTED SOURCE OF CHOLINE

- Improve liver function
- Manage energy imbalance
- Avoid metabolic issues in transition cows

### References:

1. Santos, J. E. P., and F. S. Lima. 2009. Feeding rumen protected choline to transition dairy cows. Page 149 in proceedings of the Florida Nutrition Conference. Univ. Florida, Gainesville.
2. Goselink, R. M. A., J. Van Baal, H. C. A. Widjaja, R. A. Dekker, R. L. G. Zom, M. J. De Veth, and A. M. Van Vuren. 2013. Effect of rumen protected choline supplementation on liver and adipose gene expression during the transition period in dairy cattle. *J. Dairy Sci.* 96:1102-1116.



## COMMITMENT TO QUALITY AND FOOD SAFETY

Since earning the prestigious Global Food Safety Initiative (GFSI) recognition at its Des Moines, Iowa, manufacturing facility in February 2013, Kemin Industries has remained a leader in the production of safe, quality ingredients. The recognition reinforced the company's investment in human and financial capital to enhance existing conditions and processes, verifying its products are safe, efficient and effective until they reach the end consumer. Kemin has FSSC 22000 certification, recognized by GFSI, which is accepted by food manufacturers worldwide.