

LysiGEM™ Extend

LysiGEM™ Extend is one of the most concentrated sources of rumen-protected lysine in the market today. Developed by Kemin Animal Nutrition and Health, LysiGEM Extend enables dairy farmers to meet the precise nutritional needs of their dairy cows while focusing on sustainability.

What is LysiGEM Extend?

LysiGEM Extend is an improved source of rumen-protected lysine to meet the metabolizable lysine (MP lysine) requirements of the dairy cow. LysiGEM Extend uses an encapsulation technique with a core that provides a combination of optimal particle uniformity, size and specific gravity. This proprietary technology enables the product to precisely provide dairy cows with a more consistent source of highly concentrated metabolizable lysine.

How is LysiGEM Extend different?

LysiGEM Extend is currently the only encapsulated sole lysine product that utilizes a consistent core technology. This gives LysiGEM Extend the optimal particle characteristics including particle size and specific gravity. Research indicates that particles with a size of approximately 2 mm and a specific gravity of 1.1-1.3 provide the most favourable rate of rumen passage and delivery to the small intestine for absorption. (Dufreinex et al., 2019).¹ In addition, the unique sigmoidal release mechanism of LysiGEM Extend ensures fast rumen transit time and maximal intestinal release and absorption of lysine.

LysiGEM Extend bioavailability

The plasma-free AA dose-response technique is used to determine lysine relative bioavailability. (Whitehouse et al., 2017).² This methodology is considered the gold standard for evaluating rumen-protected amino acids. Using data generated from a University of New Hampshire research trial (Whitehouse et al., 2023),³ **the relative bioavailability of LysiGEM Extend was determined to be 49%.**

- LysiGEM Extend composition:**
75% Lysine HCl
60% L-Lysine guaranteed min.
- Specific gravity:** > 1.1
- Particle size:** average of 2 mm
- Form:** Light golden brown to amber beadlets



Benefits of LysiGEM Extend



Productivity

Lysine is one of the most limiting essential amino acids in North American dairy diets, and metabolizable lysine requirements must be met to achieve maximum production levels.



Precision Feeding

Metabolizable lysine, the active ingredient found in LysiGEM Extend, can be an effective tool to achieve precision feeding in dairy production.



Sustainable Farming

Formulating diets with metabolizable lysine can contribute to more sustainable dairy farming by reducing nitrogen excretion in manure, limiting excess crude protein fed and by improving overall nitrogen-use efficiency for growth and milk production.

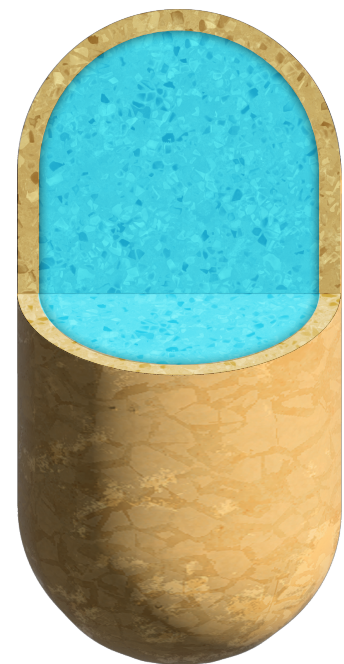
Encapsulation Technology

For more than 30 years, Kemin has invested in technology that's revolutionized encapsulation, improving the way animal nutrition products are manufactured.

Utilized in LysiGEM Extend, our proprietary GEM technology protects lysine from rumen degradation and allows for its targeted release directly into the small intestine.

Pan coating is a key element in our GEM technology. With this type of encapsulation, the coating is applied as a solution or an atomized spray to the solid core of active ingredients in the coating pan. Kemin's encapsulation technology provides:

- High concentration of core nutrient(s)
- Durability and improved handling
- Reduced rumen-retention time for high intestinal release



Kemin pan coating GEM technology



kemin.com/lysigem-extend

REFERENCES

1. Dufreine, F., P. Faverdin and J.L. Peyraud (2019). Influence of particle size and density on mean retention time in the rumen of dairy cows. *Journal of Dairy Science*. 102(4):3010-3022
2. Whitehouse, N.L., C.G. Schwab and A.F. Brito (2017). The plasma free amino acid dose-response technique: A proposed methodology for determining lysine relative bioavailability of rumen-protected lysine supplements. *Journal of Dairy Science*. 100(12):9585-9601.
3. Whitehouse, N.L., et al. (2023). Determining plasma lysine concentrations for lactating Holsteins supplemented with either infused lysine or two rumen protected lysine prototypes using the in vivo plasma dose response method. *Journal of Dairy Science* 106(Suppl. 1): 300. (Abstr.)