



Smartamine®
MetaSmart®

ADISSEO
A Bluestar Company



Concerned about fragility of methionine products? Make the **SMART** choice.

Smartamine® M is a lipid encapsulated methionine (MET) product and serves as a key ingredient for Met, the primary limiting amino acid in rations for dairy cows. Per unit basis, Smartamine® M provides the most metabolizable MET of any rumen-protected MET product on the market due to the combination of the lipid encapsulation and a specific pH trigger that allows for efficient liberation or release of MET once it flows into the abomasum or true stomach of a cow.

Smartamine® M is encapsulated to protect the MET from ruminal microbial degradation. All rumen-protected nutrient products should be mixed properly to ensure that the encapsulation or coating is not damaged prior to delivery to dairy cows. Regardless of the rumen-protected product, all are at potential risk of exposing some or all of the protected nutrient to micro-bial degradation if the product is not handled and mixed properly. Adisseo has developed a user-manual specific for Smartamine® M (www2.adisseo.com/Smartamine_M_UG) to provide instructions for feed mills on handling and mixing the product. The user-manual is routinely revised since it was first written over a decade ago to continually provide updated recommendations on handling Smartamine® M.

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To ensure that Smartamine® M meets specifications for quality after the product has been mixed at the feed mill, Adisseo offers to test feed mixes for 'total protection' and 'total liberation'. This test is an *in vitro* lab assay developed by Adisseo to assess the 'total protection' of MET within Smartamine® M after mixing and the 'total liberation' of MET in Smartamine® M once the product is exposed to conditions that mimic the true stomach of dairy cows. If inter-ested, please contact an Adisseo business manager (www.adisseo.biz/pages/team/ruminants) on how to get Smartamine® M tested for quality in premixes or total mixed rations. We routinely support feed mills and premixer facilities in evaluating handling procedures for Smartamine® M.

We understand that rumen-protected products need to be able to stand up to tough mixing conditions to be effective. The Smartamine® technology has been undermined in certain sectors of the feed industry as being too fragile and not as resistant as competitive technologies in normal feed mixing practices. Smartamine® M, along with an alternative encapsulated MET product, was therefore recently evaluated in various experimental situations ([go to page 3](#)) to mimic those tough mixing conditions and test situations in feed mills. In these experiments, the total protection rate of MET after mixing was 92% or greater in all scenarios relative to unmixed Smartamine® M. Smartamine® M also compared favorably against the competition where the MET protection rate was minimal.

Don't let fragility of encapsulated products be a concern any longer! Smartamine® M remains a durable MET product in tough mixing conditions and maintains its advantage over the competition as the most bioavailable source of MET for dairy cows.

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Stability of Smartamine[®] M

Objective

Evaluate the stability of Smartamine[®] M and a competitor product during mixing processes under various conditions, per the protocols described below.

Materials and Methods

Smartamine[®] M and Mepron[®] --each based on current production-- were both mixed under the same conditions. Products were combined in a premix (mineral or base-mix) or a concentrate mix. The premix contained 2.0% of Smartamine[®] M or Mepron[®] (as a % of DM). The concentrate mix is provided in Table 1. Mixing speed in the Paddle mixer was 60 r/min for 30 sec for the premix and 20 r/min for 3 min for the concentrate mix. Mixing speed in the Plough mixer was 150 r/min for 30 sec for the premix. Mixing speed in the Ribbon mixer was 20 r/min for 3 min for the concentrate mix. Protection rate was evaluated in an in vitro test by the CARAT laboratory at Adisseo (Commentry, France). Uncertainty of analysis is 1.2%. The results were replicated in repeated tests.

Table 1. Ingredient composition of the concentrate mix.

Concentrate Mix	% of DM
Barley	40.1
Dehydrated beet pulp	36.2
Soybean meal	14.7
Molasses	4.9
Premix containing methionine product	2.2
Urea	2.0

Results

The protection rate of methionine (MET) products after mixing in a Paddle mixer is provided in Figure 1. The protection rate of Smartamine[®] M before mixing was 94%. The protection rate of Mepron[®] was 23% and suggests that 77% of the MET in Mepron[®] is lost in the ruminal in vitro solution. After mixing with a Paddle mixer, the protection rate of Smartamine[®] M in the premix was 95.4%. In the concentrate mix, protection rate of Smartamine[®] M was 91.2%. This equates to a 100 and 97% protection rate relative to the pure product for the premix and concentrate mix. The protection rate of Mepron[®] after mixing in a Paddle mixer was 0%.

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Amino Acid Balancing.
It's Just Smart.



Results (cont'd)

The protection rate of MET products after mixing with either a Plough or Ribbon mixer is provided in Figure 2. Again, the protection rate of Smartamine® M and Mepron® were measured at 94 and 23%, respectively. The protection rate of Smartamine® M in the premix after mixing in a Plough mixer was 86.2%. The protection rate of Smartamine® M in the concentrate mix after mixing in a Ribbon mixer was 89.5%. The protection rate was 92 and 95% protection rate relative to the pure product for the premix or concentrate mix after mixing in a Plough or Ribbon mixer, respectively. Again, the protection rate of Mepron® after mixing in a Plough or Ribbon mixer was 0%.

Figure 1. Protection rate of MET products after mixing in a Paddle mixer.

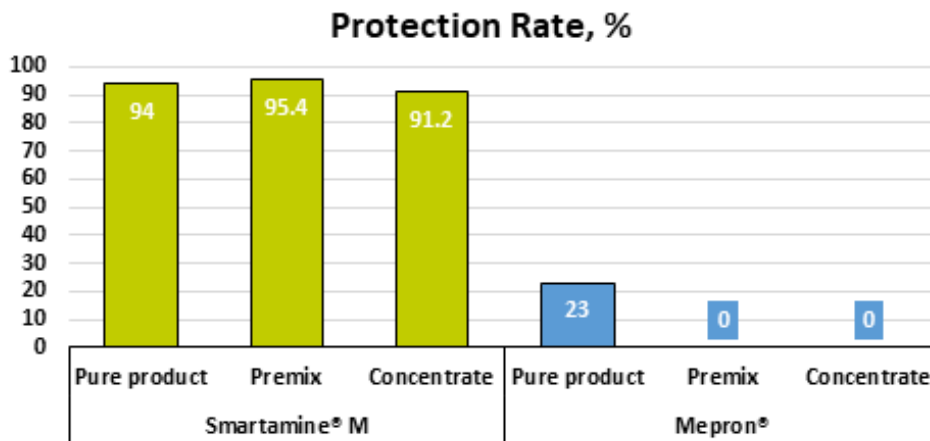
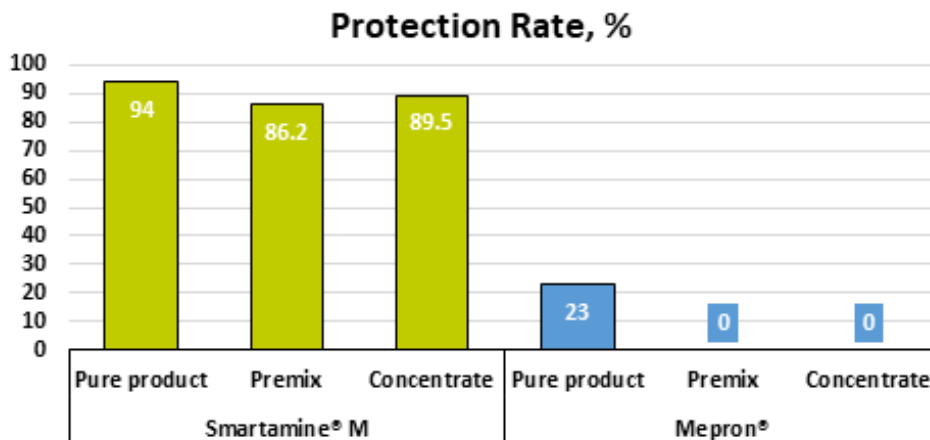


Figure 2. Protection rate of MET products after mixing in a Plough or Ribbon mixer.



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Conclusion

The protection rate of Smartamine® M was 92% or greater of the pure product after various mixing conditions. This compares quite favorably to Mepron® which had a protection rate of 0% after the same mixing conditions. All rumen-protected MET products should be evaluated after mixing to ensure that products meet manufacturers' specifications.

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