
Animal Food Pellet Binders and Pelleting Aids



INTRODUCTION

Pelleting has long been recognized as a means of maximizing feed utilization and profitability for both producer and feed manufacturer. Recent developments in automation of the pelleting process have demonstrated great strides forward. The future will bring even further developments in automatically controlled pelleting systems, equipment improvements and managerial advances. Yet despite the over 100 year history, pelleting is still as much art as science. The reasons for this are tied to the unpredictability of ingredients and the relationship of ingredients to each other and to production processes. Even so, a clearer understanding of these factors can provide a basis for making more efficient decisions and, ultimately, higher quality pelleted products.

REASONS FOR PELLETING

Since its origin, pelleting has provided the following advantages:

- Pelleting increases the gelatinization of starches in feed ingredients, improving feed conversion.
- Pelleting improves the palatability of feeds by allowing less palatable ingredients to be used.
- Pelleting helps prevent separation of micro ingredients and ensures uniform distribution throughout the feed mixture.
- Pelleting gives the nutritionist greater flexibility in formulating feeds based on palatability, ingredient variation and acceptability.
- Pelleting increases bulk density of the feed. This facilitates bulk transport, storage and feeding.
- Pelleting improves flowability of feeds for easier handling out of holding bins and automatic feeding systems.
- Pelleting reduces on-farm feed waste and increases up take.
- Pelleting may kill certain harmful microorganisms at higher temperatures.

OBJECTIVES OF PELLETING

The basic intent of pelleting has remained unchanged through the years: to produce a palatable, high quality product with minimum production expense, including least-cost formulation. Numerous variables play into the equation.

FACTORS THAT INFLUENCE PELLETING

It is important to realize that pellet quality can be affected outside of formulation or production methods. The following are all important factors that may affect pellet quality:

- Ingredient inherent moisture content
- Ingredient composition including fat / oil, fiber, protein and starch content
- Ingredient quality, source of supply and abrasiveness
- Ingredient particle size
- Ingredient temperature (pre pelleting)
- Die / roller specifications, condition and adjustment
- Length of conditioner
- Steam quality at the pellet mill (condensate, volume and pressure)
- Ambient heat and humidity
- Liquid addition (fat / oil, molasses)
- Finished pellet cooling
- Ration formulation
- Pellet mill operator experience

CONSIDERATION AND USE OF PELLET BINDERS OR PELLETING AIDS

In many cases, pellet quality can be improved or managed with formulation adjustments, processing techniques, die/roller specifications and particle size grind. However, in the real world of least cost formulation, multiple rations produced on the same production line and the many other factors that influence pelleting, pellet binders and pelleting aids are an important managerial tool to consider. In addition, there are certain rations where pellet quality cannot be practically improved without the help of a pellet binder or pelleting aid.

Listed below are examples for introducing pellet binders and pelleting aids to the pelleting process.

- Improve pellet quality
- Improve hardness of pellets, crumbles, cubes and pressed blocks
- Reduce fines at the pellet mill and also through mechanical handling
- Increase production rates to lower fixed cost per ton
- Improve handling and flowability
- Reduce the use of fats and oils as lubricants to increase pellet quality
- Improve moisture repellency

Proper use of low inclusion pelleting aids can also save on ingredient expenditure by providing more room in the ration and enhancing least-cost feed formulation. The decision to use pelleting aids is ultimately an cost/benefit consideration and should be made in accordance with the following factors.

- The type of feed being produced
- The pelletability of the ingredients used
- The addition of natural binding agents, such as high starch ingredient
- The steam conditioning process
- The type, size, thickness and condition of die used

By weighing these factors and their impact on the pelleting process, you will be able to determine how a pellet binder or pelleting aid can enhance pellet quality and production for optimum return on investment.

The following chart demonstrates ration types and associated production problems (next page).

Ration Type	Production Problem	Pelleting Aid	Product
Beef Urea	Pellet bin bridging	Anti-bridging	Bin-Aid
Beef "High Rock" Beef "High Mineral" Heat Sensitive	Limited pellet mill throughput	Pellet Lubricant	Super-Lube
Calf Creep	Moisture, pellet expansion	Pellet Binder	Uni-Bond
High Molasses	Pellet quality, fines, durability	Pellet Binder	Molastik
Range Cube	Shorts, durability, length, moisture repellency	Pellet Binder	Super-Bind Molastik Uni-Bond
Pressed Blocks	Hardness, improved compression, moisture repellency	Pellet Binder	Super-Bind Molastik Uni-Bond
Ruminant	Pellet quality, fines, durability	Pellet Binder	Super-Bind Molastik Uni-Bond
Ruminant	Caking/Hardening Free Choice Minerals	Free Flow Agent	Xtra-Dry
High Fat	Pellet quality, fines, durability, fat weeping, short pellets	Pellet Binder	Super-Bind Molastik Uni-Bond Starch Binder
High Grain Swine/Poultry	Pellet quality, fines, durability	Pellet Binder	Super-Bind Uni-Bond
High Distillers Grains	Pellet quality, fines, durability, short pellets/cubes	Pellet Binder	Super-Bind Molastik Uni-Bond
Dairy	Pellet quality, fines, durability	Pellet Binder	Super-Bind Molastik Uni-Bond
Textured/Sweet Feed pre-mix pellets	Moisture, pellet expansion, pellet quality, fines, durability	Pellet Binder	Uni-Bond Molastik
High Fiber	Pellet expansion, pellet quality, fines, durability	Pellet Binder	Super-Bind Molastik Uni-Bond
Pre Mixes	Caking/Hardening high levels of salt, choline chloride, etc.	Free Flow Agent	Xtra-Dry
Rabbit	Limited pellet mill throughput, burning pellets	Pellet Lubricant	Super-Lube
Wild Game	Moisture Repellency, Pellet quality, fines, durability	Pellet Binder	Uni-Bond Molastik
Pet	Binding treats	Pellet Binder	Pel-Aid Starch Binder Super-Bind
Aquaculture	Water Repellency	Pellet Binder, Moisture Repellency	Uni-Bond (export) Super-Bind