

AFG-ANIMAL FEED GRADE

- Improved anionic/cationic ratios
- Improved feed intake
- Enhanced immune function
- Improved weight gain and feed conversion
- Improved enzyme function (Amylases, Proteases) for increased protein absorption and reduced nitrogen excretion, reducing litter ammonia
- GRAS (Generally Recognized as Safe) for use in human foods by FDA



PRODUCT DATA SHEET FOR AFG

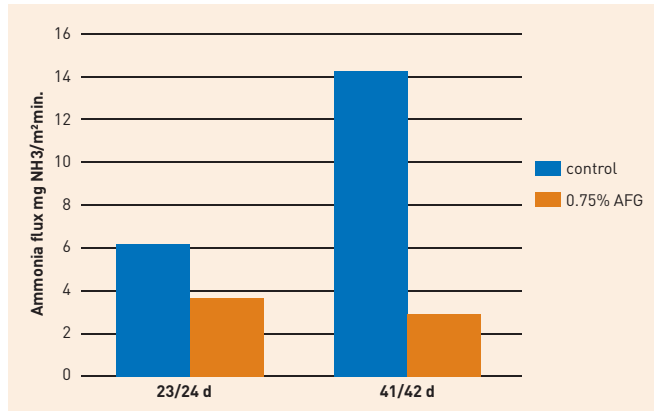
AFG Sodium Bisulfate Animal Feed Grade is an animal feed grade inorganic acid that was approved for use in animal feed in 1997. Feed acidifiers are added to improve health and production of poultry. AFG will reduce pH of the gut to biologically significant levels while enhancing enzyme activity, solubility of phytate phosphorus and nutrient absorption. AFG is classified as a general purpose feed additive under the Association of American Feed Control Officials' (AAFCO) Feed Ingredient Division. It is used as an acidulant and anion ingredient in poultry feed.

**Sodium Bisulfate has been reviewed by EPA's Safer Choice Program and qualifies for use in Safer Choice-labeled products.*



For optimal performance of AFG and to gain the maximum health and performance benefits for birds, the following application procedures are recommended.

TOTAL LITTER AMMONIA FLUX WITH AND WITHOUT AFG IN THE DIET



Patterson et al. 2007. Dietary sodium bisulfate, humate and zeolite for broiler chickens: Impact on performance, litter nutrients and ammonia flux. Presented at Poultry Science Assn. Mtg., San Antonio, TX, July 8-12, 2007.

DATA

Broiler weight gain and feed conversion have shown marked improvement with use of AFG. Data from university 49-day floor-pen trials are shown below.

Trial 1

Treatment	Weight	Feed Conversion
Control	6.581	1.837
0.25% AFG	6.704	1.795
0.75% AFG	6.700	1.784

Trial 2

Treatment	Weight	Feed Conversion
Control	5.204	2.009
0.25% AFG	5.430	1.925
0.75% AFG	5.624	1.865

Trial 3

Treatment	Weight	Feed Conversion
Control	5.855	1.845
0.25% AFG	5.895	1.718
0.50% AFG	6.025	1.700
0.75% AFG	5.870	1.728

PROPERTIES OF FEED ACIDIFICATION

Acid strength is denoted by pKa value. The lower pKa value, the stronger the acid. The pKa value indicated the ease at which the hydrogen ion dissociates. Since pH is a measurement of hydrogen ion concentration, acids with a low pKa value will do a better job at lowering pH. Less AFG is required to lower pH than most commonly used acids, including organic acids.

Feeding AFG is safe. In independent university trials, broilers were given AFG at a rate 25 times the recommended feeding rate. This simulated adding 2,000 lbs. of AFG in an 8 ton mixer. No adverse effects were noted.

FREQUENTLY ASKED QUESTIONS

How should AFG be handled in the mill?

AFG should be handled just like salt. Care should be taken to keep the product dry and equipment should be flushed with grain or meal. The product may be added to the mixer by hand, micro machine, or through the minor ingredient scale.

What is the proper inclusion rate?

Our data shows the greatest return in broilers at levels of 5-10 lbs./ton of feed included in the rations for the first 28-30 days. AFG may be fed throughout the grow-out with small broilers or Cornish hens or for biological challenges and ammonia control in larger birds. Turkey toms or hens should be fed up to 6 lbs./ton through 12 weeks.

Can AFG be used in antibiotic-free programs?

AFG is considered a natural product and is recognized as GRAS. Therefore, it is a good fit for antibiotic-free programs.

SUGGESTED INCLUSION RATES

Broilers – Include in all rations at a rate of 5-10 lbs./ton

Turkeys – Include in all rations at a rate of 3-6 lbs./ton

