

Natuphos® 5000

Phytase

SS 9501
8th Rev. Edition

Technical Bulletin

Product Description

Natuphos® 50 contains a guaranteed minimum of 5000 Phytase Units (FTU) per gram (2,268,000 FTU/lb).

Chemical characteristics

Chemical name: Mio-inositolhexaphosphate phosphohydrolase (3.1 3.8)

Bulk density: 0.22 g/cm³

Particle size: minimum 95% <0.63mm

Loss on drying (3 hr/105°C): maximum 8%

Carrier: Rice Hulls, Wheat Middlings, calcium carbonate

Appearance

Tan, free flowing powder

Definition of content

One unit of phytase (FTU) is defined as the quantity of enzyme which liberates 1 micromol of inorganic phosphorus per minute from 0.0051 MOL/L of sodium phytate at pH 5.5 and 37°C.

Ingredients

Rice Hulls, Wheat Middlings, Calcium Carbonate, Dried Aspergillus Niger Fermentation Extract.

Analytical method

The analytical method is based on the liberation of inorganic phosphorus from sodium phytate. Incubation is carried out at pH 5.5 and 37°C for 30 to 60 minutes. The liberated phosphorus is analyzed by the molybdenum blue method and quantitated by photometry at 415 nm. A phytase standard of known activity is treated in the same way. The measured increase in absorption of the product sample is compared with that for the standard (relative method).

Storage and Stability

Phytase, a high molecular weight protein, is sensitive to the presence of moisture and high temperature, as are other enzymes. Therefore, Natuphos® should be kept in a cool, dry, room and the container close when not in use.

If Natuphos® powder (Natuphos®) is added before pelleting, the pelleting temperature should not exceed 70°C (158°F). If the pelleting temperature exceeds 75°C (168°F), the exclusive use of Natuphos® liquid (Natuphos® L) is recommended. Pellets should be sprayed in a low speed screw or a spray drum down stream from the cooler. Natuphos® L can be diluted with water immediately prior to use to provide a better pellet coverage (Table 1).

Packaging

50lb paper bag with Polyethylene Liner.

Recommended use level

Recommended Natuphos® Supplementation and nutrient values in swine and poultry feed is detailed in Table 2 and 3.

Use

To increase the digestibility of phytin-bound phosphorus.

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Table 1. Formulation Selection

Pelleting Temperature	Product of Choice
Mash feed	Natuphos 600, 1200
Pelleted at < 158°F (70°C)	Natuphos 600, 1200 applied pre-pelleting (in mixer) or Natuphos 5000L applied pre- or post-pelleting
Pelleted at > 168°F (75°C) Expanding or extrusion	Natuphos 5000L applied post-pelleting Natuphos 5000L applied post-extrusion

Table 2. Inclusion levels and nutrient values for Natuphos® 5000 in poultry diets

Nutrient	Natuphos 5000 least cost matrix value								
	Broiler			Layer			Turkey		
	Starter	Gro-Fin	Breeder	Pullet	Laying	Breeder	Starter	Gro-Fin	Breeder
Phytase, FTU/kg	600	600	600	600	600	600	600	600	600
Natuphos 5000, % of diet (max.)	0.012%	0.012%	0.012%	0.012%	0.012%	0.012%	0.012%	0.012%	0.012%
Phosphorus, %	917	1000	1000	1000	1083	1083	917	1000	1000
Calcium, %	917	1000	1000	1000	1083	1083	917	1000	1000
ME, Kcal/kg	124000	124000	124000	124000	124000	124000	124000	124000	124000
Crude protein, %	3667	3667	3667	3667	3667	3667	3667	3667	3667
Lysine, %	189	189	189	189	189	189	189	189	189
Methionine, %	29	29	29	29	29	29	29	29	29
Cystine, %	58	58	58	58	58	58	58	58	58
Met + Cyst, %	87	87	87	87	87	87	87	87	87
Tryptophan, %	17	17	17	17	17	17	17	17	17
Threonine, %	125	125	125	125	125	125	125	125	125
Valine, %	148	148	148	148	148	148	148	148	148
Isoleucine, %	161	161	161	161	161	161	161	161	161
Leucine, %	250	250	250	250	250	250	250	250	250
Arginine, %	208	208	208	208	208	208	208	208	208
Phenylalanine, %	170	170	170	170	170	170	170	170	170
Histidine, %	120	120	120	120	120	120	120	120	120

Table 3. Inclusion levels and nutrient values for Natuphos® 5000 in swine diets

Nutrient	Natuphos 5000 Swine least cost matrix value, %		
	Starter	Grower-finisher	Gilt/sow
Phytase, FTU/kg	500	500	500
Natuphos 5000, % of diet (max.)	0.01%	0.01%	0.01 %
Phosphorus, %	1100	1200	1100
Calcium, %	1100	1200	1100
ME, Kcal/kg	127000	127000	127000
Crude protein, %	3000	3000	3000
Lysine, %	100	100	100
Methionine, %	40	40	40
Cystine, %	30	30	30
Met + Cyst, %	70	70	70
Tryptophan, %	20	20	20
Threonine, %	40	40	40
Valine, %	100	100	100
Isoleucine, %	82	82	82
Leucine, %	110	110	110
Phenylalanine, %	83	83	83
Histidine, %	45	45	45
Arginine, %	101	101	101