

Technical Data Sheet


DFP Feed Grade

【Product Name】 Defluorinated Phosphate (Calcium Sodium Phosphate) 18% Feed Grade

【Molecular Formula】 $(Ca_5Na_2(PO_4)_4 + Ca_3(PO_4)_2)$

【C.A.S. No.】 7758-87-4

【Specification】

Chemical Composition	Guarantee	
Total P:	18% min	
Calcium:	30.5% min	
Fluorine(F):	0.18% max	
Arsenic(As):	10PPM max	
Lead(Pb):	15PPM max	
Cadmium(Cd):	4PPM max	
Sodium(Na)	4.5% min	
Particle size pass 0.2-1.5mm (Granular)	90% min	
Particle size pass 500µm (Powder)	90% min	
Bulk Density lbs/ft3(kg/m3)	94-99(1500-1580)	

【Transport and Storage】 It is slightly hygroscopic and Non-DG for road, rail and sea transport. Stored in a dry and cool place with sealed bag.

【Packaging and Shelf Life】 in 25/1000/1200kg PP woven bag with inner PE bag & 3 years shelf life.



Select Zerophos α DFP?

With improvement of the cattle species, the body size are becoming larger and larger and milk yield obviously increased. But conversely, diseases like an orthosis, infertility, mastitis and other metabolism problems are accompanied and are disturbing the industry with endless treatments.

Defluorinated Phosphate(DFP), synonyms: Calcium Sodium Phosphate is α type premium feed phosphate by thermal-process adding NaCO_3 with extreme low heavy metal applied for the improvement of compound feeds.

Why P is so important?

1. It helps produce bones.

Animal bones cannot be produced only by Ca but also need P to work together for the purpose. Osteoblasts function of young animals is not adequate, if short of P and Ca, it can lead to rickets and osteoporosis diseases. Even if for adult animals, the elements will dissolve from the bones if P and Ca is deficient and result in the same diseases.

2. P is the carrier of energy.

Animals depend on eating plants to accumulate starch and use the energy it produced to move and grow; or relying on other forms like fat, etc. to store energy.

People refer to the process of storing energy for moving and growing as energy metabolism. And P (in form of P) is essential during the energy metabolism process.

P is an integral matter to apply the feed energy to animals with high efficiency.

An experiment carried out by Ontario University, Canada shows that if increase proportion of Calcium Phosphate to feed of the same level, metabolism energy will also go up. That means more energy are absorbed and used.

Calcium Phosphate in feed (proportion %)	Metabolism energy (Cal/g)
0.150	2.85
0.238	2.96
0.378	2.97
0.600	3.00

In case of lack of P, the feed energy cannot be absorbed thoroughly and excrete as waste.

3. It is the component of cell nucleus.

Organisms are composed by large quantity of cells. The process which cells keep increasing after division is called "Growth". More introduction about this is not necessary here. The nucleus is the role which controls and commands cell division. P is important component in cell nucleus.

Therefore, P is indispensable during process of growth and metabolizing.

In addition, in reproductive cells, special cell division follows one physiological action named “breed”, during which P perform an important function. So providing feed with good effect can enhance fertility rate, protecting breeding difficulties such as barrenness and empty embryo and so on.

4. It is component of enzyme.

Feed components include protein, fat and soluble no-nitrogen matter, etc. These components become raw material for the body to grow after well reduced, providing energy for growing and movement.

In addition, the materials reduced will finally turn into blood and muscle for animals, and what attends the process of reducing and compounding is enzyme.

Enzyme also has many different kinds; among every kind of import enzyme, P is a representative group. It directly or indirectly runs the metabolizing function. Performances of P include movement metabolism, sugar metabolism, lactic acid metabolism and energy metabolism of fat.

Because P performs important part in all these metabolism, add P and Ca to animal feed can improve quality and increase quantity of milk.

5. It's tranquillizer for the physical and chemical status of blood.

Both P and Ca can affect the tranquillizing status of PH value of blood/body fluid and other physical/chemical status.

In order to carry out P and Ca metabolism smoothly, it's only necessary to keep the balance of P and Ca content, but also need to consider how it can be absorbed and used. *Zerophos* DFP is the right product which makes sure both P and Ca be absorbed while keeping the right ratio between the two. It's more efficient comparing to other Ca-supplement products.

The main ingredients of *Zerophos* DFP are bone powder, fish powder; its mineral matter is also Calcium Phosphate, no big change in this respect. However, Calcium Phosphate formed naturally like bone powder and fish powder are different with *Zerophos* DFP in the respect that the latter is treated with high temperature. Hence, natural ones are difficult to be dissolved (i.e. not easy to be absorbed).

Ca/P, Natural Calcium Phosphate has crystalline structure of basic phosphorite, which is a kind of too hard structure to be dissolved. On the contrary, *Zerophos* DFP is a more superior crystalline structure of α type, which can be easily dissolved and absorbed in condition of animal gastric juice.

Comparison of each mineral matter

	Use rate	
	Tested value	Average value
β type Calcium Phosphate	100	100
<i>Zerophos</i> DFP	99~103	101
Di- Calcium Phosphate	89~104	97
Bone powder	70~100	91

The experiment carried out by observing the effectiveness of Ca and P in bone and liver of young lambs show that *Zerophos* DFP is effective as source of Ca and P.

		Standard	<i>Zerophos</i> DFP applied
Ca%	Jawbone	30.98%	32.23%
	Rib	26.15%	28.14%
	Liver	0.33%	0.13%
P%	Jawbone	12.70%	13.28%
	Rib	10.85%	11.58%
	Liver	0.46%	0.46%

Inorganic matter is not only the main component of bone and teeth of poultry, it also matters in process of formation of muscle, organs, hemocyte and protein/fat of other soft tissues, keeping the activity of most enzyme in the body.

In addition, dairy cattle produce a lot of very useful inorganic matter for human in the milk. Inorganic matters milk dairy needs include Ca, P, Mg, K, Na, Cl, S, Fe, Cu, Co, Zn, Mn, I, Mo, F, Se, of which the quantity of Fe, Cu, Co, Zn, Mn, I, Mo, F, Se in animal body is very little, so they are classified as micro inorganic matter. On the contrary, Ca, P, Mg, K, Na, Cl, S are classified as main organic matter.

The quantity of main organic matter required though will differ according to the growth stage, growth speed, pregnant, milk secretion conditions, it also differs as the ratio of inorganic matters varied.

Besides, difference in chemical form will also lead to obvious different result of absorption. Throughout history, most mineral matter supplement for grazing ruminant livestock is necessary, but amongst all supplement, recent study shows that only Se is enough. When it comes to the question of mineral matter supplement, we meet the problem that which way is most suitable one.

The methods for supplement are using it as a part of feeds by mixing it in the feed or optionally select mineral matter mixtures.

The former way is generally used in poultry or pig; the latter is used in part of ruminant livestock.

In ruminant livestock, if feeding in farm, mineral matter is mixed in the feed so that the cattle can absorb all nutrients in the feed mixture of rational ratio.

Amongst beans species, pasture grass has very high Ca while has little P. In corn silage and sorghum silage, both Ca and P content are very little. So, if using these kinds of feed, it's important to control the content of Ca and P, of which ratio should be below than 2.

Generally speaking, among all poultries, cattle is the one easier to be lack of P, especially in earth where contain less P. So, cattle especially milk cattle is the group which have the highest risk of low P.

This is because dairy cattle secrete a lot of P by producing milk. Generally one dairy cattle need 13g P per day, but if it produces 20L milk, which contains 20g P, and considering the absorption rate, the supplement required per day should be 35g. If dairy cattle are going through P-deficiency, it cannot be known by appearance, but the pregnancy rate will be obviously reduced, which is universally acknowledged.

In the experiment of dairy cattle of low P, it's observed that short of P can result in losing weight, loss of appetite, stiff limbs, muscle degeneration, loss of libido, shortness of breath and along with pulse acceleration, more feed quantity is required to be increased. Besides, inorganic P in blood becomes low while Ca in urine goes high and milk production quantity also decrease. Under this circumstance, if input P can quickly increase appetite and weight and milk secretion as well, this is also widely acknowledged.

From this experiment, short of P can do harm to dairy cattle in respect of milk production and breeding. In volcano ash soil, P is usually short and application of P fertilizer does not yield satisfactory improvement; P content in grazing grass of these areas is also low. Phenomenon in this kind of soil zone is actually a matter to concern.

Na, as a supplementary source of minerals, it's commonly used sodium chloride. However, if use *Zerophos* DFP, then, can prevent acidification (acidosis) (also known as acidosis) , which caused by the body fluids of low pH due to the increase of chloride ion.