

# CALFOS



## **CALFOS: THE NATURAL BONE PHOSPHATE**

Calfos is the product name for Sonac's hydroxy-apatite. It is produced from animal bones that have been crushed and degreased. The bone chips are further processed by a heat-and-pressure treatment (110 °C for 20 min.). The gelatin is removed to a large extent and the remainder is dried and finely ground to improve the digestibility. This is the product named Calfos.

**Natural Ingredients. Smart Solutions.**

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INGREDIENTS



# HOW TO USE CALFOS

## ADDITIONAL NUTRITIONAL VALUE

The tri-calcium phosphate is still present in its original hydroxy-apatite matrix. The remaining protein (10% in the product) is collagen and represents an additional nutritional value. Calfos is produced at Sonac Vuren, the Netherlands. According to the current EU feed law Calfos is permitted to be used in feeds for non-ruminants: i.e. pigs and poultry. Dedicated feed mills or production lines are therefore necessary.

## SYNCHRONIZED SUPPLY

During the digestive process in the gut, calcium and phosphorus are released at the same time and in the correct ratio for optimal absorption. This makes Calfos very suited to help to restore or help to prevent weak leg and bone problems, like osteoporosis (quite common among laying hens); or to replenish Ca and P in the skeleton after a period of a negative balance like during the startup of the milk production of lactating sows. Calfos is also used in humans to help to prevent osteoporosis with good results.



## THE ADVANTAGES OF CALFOS:

- high level of available and digestible phosphorus and calcium
- natural and safe origin
- contributes to sustainable livestock production (recycling/reuse of P)
- low in heavy metals, dioxin and no radio-activity
- tracking and tracing system in place

## BIO-AVAILABILITY

In animal nutrition a lot of different systems are in use to make the best estimation of the bio-availability of especially phosphorus for farmed animals. This leads to several values for the same phosphorus source in different regions of the world. Sonac recommends the values obtained and deducted from the Dutch CVB system.

| Calfos                             | Poultry |
|------------------------------------|---------|
| <b>Digestible P (% of total P)</b> | 87      |
| <b>Available P (% of total P)</b>  | 100     |

These digestibility figures for phosphorus have been concluded from a trial done with poultry at the WUR institute (the Netherlands), following the new WPSA<sup>1,2</sup> protocol.

<sup>1</sup> WPSA (World Poultry Science Association)

Literature reference:

<sup>2</sup> Rodehutsord, M. 2013. Determination of phosphorus availability in poultry. World's Poult. Sci. J. 69:687-698. doi 10.1017/s0043933913000688.



### APPLICATION IN:

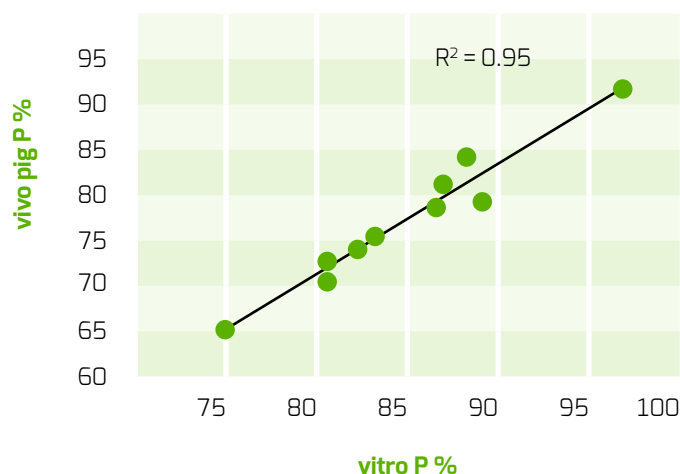
- non-ruminant feed
- pet food
- aqua feed
- organic fertilizer

## SUSTAINABLE AGRICULTURE

Mineral phosphates are produced from mined rock phosphates out of reserves that are limited towards the future. Calfos is produced from bones of healthy animals. So using Calfos as a source of phosphorus contributes to the reuse of this resource.

## IN-VITRO ESTIMATIONS

Apart from testing on living animals (in-vivo) also in-vitro methods have been developed to assess the bio-availability of phosphorus sources. A validated in-vitro method is a method developed by CCL (NL) based on the two enzymes pepsin and pancreatine, which simulates the digestive tract of pigs. More data are available on request.



## HEAVY METALS AND OTHER CONTAMINANTS

| Contaminant            | Units    | Max   | Calfos   | Processed** Rock Phosphate |
|------------------------|----------|-------|----------|----------------------------|
| Arsenic                | mg/kg    | 10    | 1,7      | 5                          |
| Cadmium                | mg/kg    | 10    | 0,13     | 5                          |
| Fluorine               | mg/kg    | 2.000 | < 10     | 1.004                      |
| Lead                   | mg/kg    | 15    | < 0,2    | 5                          |
| Aluminium              | mg/kg    | n.a.  | 0,8      | 12.000                     |
| Dioxin                 | ngTEQ/kg | 0,5   | < 0,11   | 0,17                       |
| <b>Radio-activity*</b> |          |       |          |                            |
| Cadmium 109            | Bq/ unit | n.a.  | Negative | 1.8* 10 <sup>4</sup>       |
| Radium 226             |          |       | Negative | 1.1* 10 <sup>4</sup>       |
| Americanum 241         |          |       | Negative | 8* 10 <sup>3</sup>         |

\* Negative means: no increased radiation compared to the background

\*\* Derived from database contaminants DOS

| Nutritional data (indicative and as is) | g/kg      |
|---|-----------|
| Moisture                                | 50        |
| Crude protein                           | 100       |
| Calcium                                 | 300       |
| Phosphorus                              | 130       |
| Digestible P poultry                    | 113       |
| Available P poultry                     | 130       |
| ME poultry                              | 2.7 MJ/kg |

Sonac is a leading manufacturer of reliable ingredients of animal origin. With an active R&D program, reliable processes and sustainable end products Sonac continuously adjusts to market needs. A good geographical spread of locations and a broad portfolio of fats, proteins, minerals and specialties make Sonac a trusted partner for many international producers in food, pet food, feed and fertilizers, worldwide. Sonac is part of Darling Ingredients.



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