



Knowledge grows

BOLIFOR® MCP-F

BOLIFOR® MCP is a unique monocalcium phosphate produced at precise conditions by reacting phosphoric acid and a calcium source in a granulator. The purity of the phosphoric acid, coming exclusively from the apatite (volcanic origin) and Yara's integrated production process, according to GMP+ standards, ensure the consistency of BOLIFOR® MCP properties.

BOLIFOR® MCP appears as grey granules and it is highly soluble in water and diluted acids. BOLIFOR® MCP is odorless and has an acidic taste.

Sales specification

Product Properties	
Phosphorus (P)	22.70%
Relative solubility in	
- 2% citric acid	98%
- alkaline ammonium citrate	98%
- water	75%
Calcium (Ca)	16,50%
Ca:P ratio	0.7:1
Magnesium (Mg)	1%
pH	4 - 5
Ash insoluble in 3N HCl	< 1%
Moisture	< 3%

Physical Properties	
Particle size of BOLIFOR® MCP-F*	>90% within 0.2 - 1.5 mm, guaranteed when delivered from factory
Bulk density kg/m ³	900-1100
Water activity aw	< 0.70

Nutritive value

Phosphorus is an essential macromineral for all animals. It is involved in many metabolic functions such as bone formation and maintenance, energy metabolism or egg shell formation. BOLIFOR® MCP contains 22.7% of total phosphorus and its digestibility has been proven to be superior among other

monocalcium feed phosphates and other types of feed phosphates typically included fed to livestock. Trial reports and digestibility coefficients are available on request. Consequently, BOLIFOR® MCP has a superior digestible phosphorus content which maximizes phosphorus absorption and retention by the animal at lower levels of inclusion.

Identification

Chemical formula: $\text{Ca}(\text{H}_2\text{PO}_4)_2 \times \text{H}_2\text{O}$

CAS No.: 10031-30-8

EINECS No.: 231-837-1

Special advantages

The proven superior phosphorus digestibility of

- ✓ BOLIFOR® MCP maximizes phosphorus absorption and retention
- ✓ Minimizes phosphorus excretion, contributing to environmental sustainability

Due to its superior nutritional value, BOLIFOR® MCP requires lower inclusion rates than other marketed feed phosphates, this

- ✓ Maximizes feed cost-efficiency
- ✓ Minimizes logistics, handling and storage costs
- ✓ The purity of the raw materials used to manufacture BOLIFOR®MCP ensures its consistency, which guarantees compliance with feed safety requirements worldwide
- ✓ Enables a precise least-cost diet formulation

BOLIFOR® MCP is produced in two different granulations: coarse granulation -MCP-N-, and standard granulation -MCP-F-.

How do you evaluate a feed phosphate?

Any feed phosphate must be evaluated by the phosphorus fraction which is utilized by the animal. This is calculated as the total P content times its "availability". However the high number of techniques and concepts associated to phosphorus can generate confusion:

- *In vitro* test deliver phosphorus solubility results. The amount of phosphorus solubilized in acid or water is not well related to the amount of phosphorus ready to be used by the animal.
- Qualitative measurements, such as relative bioavailability, compare different feed phosphates to a standard under certain conditions. Different results are obtained depending on the standard and the testing condition



- Quantitative measurements, such as phosphorus digestibility, informs about the real amount of phosphorus absorbed by the animal. Thus, digestibility is consistent and realistic, appropriate for feed formulation.

Make sure you ask for phosphorus digestibility values, obtained by quantitative tests, not only total phosphorus content.

Quality check references

Total phosphorus (P) extraction	Comparable with Regulation (EC) No 2003/2003 method 3.1.1
Solubility in 2% citric acid	Regulation (EC) No 2003/2003 method 3.1.3
Solubility in alkaline ammonium citrate	Regulation (EC) No 2003/2003 method 3.1.5.1
Solubility in water	Regulation (EC) No 2003/2003 method 3.1.6
Determination of phosphorus (P)	Comparable with Regulation (EC) No 2003/2003 method 3.2
Total Calcium (Ca) extraction	Comparable with Regulation (EC) No 2003/2003 method 3.1.1
Total Calcium (Ca) determination	Comparable with Directive 71/250/EEC method 3
pH	1% solution, in water
Ash insoluble in 3N HCl	Directive 71/250/EEC method 6
Moisture (mechanical free water)	Acetone wash, room temperature

Undesirable substances	Standard specification	BOLIFOR® Values	Method of analysis
Fluorine (F)	Max. 2 g/ kg	< 2 g/kg	ISE
Arsenic (As)	Max. 10 mg/kg	< 5 mg/kg	HG-AAS
Cadmium (Cd)	Max. 10 mg/kg	< 0.6 mg/kg	GF-AAS
Lead (Pb)	Max. 15 mg/kg	< 2.5 mg/kg	GF-AAS
Mercury (Hg)	Max. 0.1 mg/kg	< 0.05 mg/kg	AFS
Dioxins (PCDD/F(BEQ))	Max. 0.75 ng/kg	< 0.2 ng/kg	DR CALUX
Dioxins + dioxin-like PCBs (PCDD/F and dl PCBs(BEQ))	Max. 1.0 ng/kg	< 0.3ng/kg	DR CALUX

*Method of Test: Method 3.2 – EC Regulation No: 2003/2003/EC.

Direction for use

The superior chemical solubility and digestibility make BOLIFOR® MCP a top ranked granular phosphorus and calcium source. It is recommended for use in concentrates, compound feed, mineral feed and other feeds for cattle, pigs, poultry and all animals also including pet food.

Classification, labelling and packaging

Irritating – avoid eye contact.

Labelling conforms to Regulation (EC) No 767/2009 of the European Parliament and of the Council and to Commission Regulation (EU) No 68/2013.

Packaging available in 25 kg, 50 kg, 1000 kg, 1150 kg and bulk.

Handling and storage

BOLIFOR® MCP-F should be stored indoors in a dry and cool place in properly sealed packaging. When handled and stored according to instructions the shelf life is three years.

Transport and transport regulation

Transported on road, rail and by sea. Not classified as dangerous goods.

Yara Animal Nutrition
www.yara.com/animal-nutrition
animal.nutrition@yara.com



Yara, Animal Nutrition is part of the Cefic Sector Group
 Inorganic Feed Phosphates

The information above is intended to serve as guidelines and does Not constitute a guarantee. We reserve the right to make changes. Valid from 2014-05-01.

LEGAL NOTICE - Yara International ASA and/or its group companies (collectively "Yara") make no express or implied warranty or representation concerning the accuracy or completeness of this document or the information contained in it. Information contained in this document is to the best of Yara's knowledge correct and accurate on the date of issuance. Any information provided is merely intended to serve as guidelines for the appropriate use, handling and storage of our products and may not be deemed as a guarantee or indication of quality, or serve as a basis for liability towards Yara in any way whatsoever. Any drawings, descriptive matter or illustrations contained in this document are provided for the sole purpose of giving an approximate idea of the products described in them. This document and any information contained in it shall remain the property of Yara. No rights, including, but not limited to, intellectual property rights, in respect of this document are granted to any recipient. Yara reserves the right to adjust and revise this document at any time. Please refer to our General Terms and Conditions for more information on legal matters.

Version 01/2019

