



# PerMicro Pro

**Powerful and High-quality Leaven**

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Hunan Perfly Biotech Co., Ltd. was officially established in May 2006. Its headquarter is in Jinxia Economic Development Zone, Kaifu District, Changsha, Hunan. The company is a comprehensive company specialized in animal nutrition research and it sets research & development, production, sales and services in one. The company has passed ISO9001: 2015 Quality Management System Certification, ISO22000: 2018 Food Safety Management System Certification, and FAMI-QS European Feed Additives and Premix Feed Quality System Certification.

R&D center has three sectors: Fermentation Engineering, Preparation Engineering, and Functional Feed Additives, consisting of Microcapsule Emulsification Laboratory, Microecological Preparation Laboratory, Biological Fermentation Laboratory, Product Verification Laboratory & etc. There are more than 30 research personnel in the center. Fermentation Engineering is committed to the selection and breeding strains, the development of microecological preparation and the development of biological fermented feed. Up to now, there are dozens of excellent strains used for livestock and poultry, aquaculture, ruminants and special economic animals and pets to screen the better strain to solve intestine problems. Nowadays, ***Bacillus subtilis*** for short generation time (PerMicro BS) and ***Bacillus coagulans*** for high acid-producing (PerMicro BC) are well recognized by customers.

On the condition of manual control to use modern biotechnology such as genetic engineering, protein engineering, fermentation engineering, etc., biological fermentation feed utilizes the growth and metabolism activities of beneficial microorganisms such as lactic acid bacteria,

yeasts, and bacillus to decompose or transform the anti-nutritional factors in feed ingredients to produce products that are more easily eaten, digested, and absorbed by livestock and poultry, having higher nutrients, and are non-toxic and harmless by using all kinds of feeds and feed additives. The high-quality biological fermentation feed can achieve a yield of about 90% after processing, and the secondary metabolites are rich, from the early stage mainly containing bacteria to the high-quality products that mainly contain metabolites and bacteria. The company have domestic first-class microbial research and development laboratories and fully automatic solid-state fermentation tanks and other high-tech facilities. The company can not only provide customers with high-end, stable and mature high-quality biological feed, feed starter and fertilizer starter, but also provide customized products according to customer needs.

PerMicro Pro developed by Perfly is the high-efficiency starter for various feeds and feed ingredients, the bacteria are rationally combined according to different fermentation ingredients to achieve the best fermentation effect.



## Main components

*Bacillus, lactobacillus, yeast, carrier*

## Indicators

No. of viable bacteria  $\geq 1 \times 10^{13}$  CFU/kg

## Application

It is used to ferment all kinds of feeds and feed ingredients.

## Features

1. Abundant metabolites and powerful functions.

Corn and soybean meal feed is fermented to form the product, and the yield can be about 90%. A large amount of nutrients is used by microorganisms to produce abundant metabolites and functional substances. The number of viable microorganisms is high, and the effect is obvious.

2. Different strain compatibility for different effects.

The bacteria have strong reproductive power, rich enzyme production, multiple enzyme systems, and various biological active substances synergistically, and after fermentation, the small molecule nutrient content is high.

3. The fermentation speed is fast, and the fermentation can produce gas in as little as 30 minutes. The fermentation cycle is short, the sour fragrance produced by the fermentation is strong and unique, and the attracting effect is good.



4. Does not attract mosquitoes and flies and is easy to maintain a good fermentation environment.

5. Moderate fermentation temperature is beneficial to maintain the biological activity of functional substances and the survival rate of functional bacteria.

6. Customized products according to fermentation materials along with fermentation technology solutions can process distillers' grains, DDGS, apple pomace, bagasse, bean curd residue, medicine residue, sugar residue, rapeseed meal, cottonseed meal, rice bran meal, palm meal, corn germ meal, soybean meal, corn husk, buckwheat husk, remnants of agricultural and sideline products and dregs waste, the removal rate of toxins and anti-nutritional factors up to 80%, turning waste into treasure and reducing feed cost.

## Efficacy

1. The contrast effects before and after soybean meal fermentation (parts of indexes)

Indexes	Before fermentation	After fermentation
Urease activity U	0.320	0.011
Trypsin inhibitor TIU/g	2680	130
Antigen protein mg/kg	50000	100
Oligosaccharide %	6	1
Lipoxidase (OD234nm)	-0.149	0.012
Soybean agglutinin (valence)	20480	80
Crude protein %	43.2	49.1
Acid Soluble Protein%	1.27	14.53
The ratio of acid-soluble protein to crude protein%	2.93	29.59

2. The contrast effects before and after bran fermentation (parts of indexes)

Indexes	Before fermentation	After fermentation
pH	6.34	4.29
Crude protein %	11.09	11.72
Acid Soluble Protein%	0.79	3.53
The ratio of acid-soluble protein to crude protein%	7.14	30.09
Yield %	-	90.5

3.The contrast effects before and after corn, bran and soybean fermentation (parts of indexes)

Indexes	Before fermentation	After fermentation
pH	6.42	4.34
Crude protein %	19.32	21.22
Acid Soluble Protein%	1.62	4.46
The ratio of acid-soluble protein to crude protein%	8.39	21.02
Yield %	-	89.7

4.The contrast effects before and after cotton meal, rapeseed meal, sesame meal fermentation (parts of indexes)

Indexes	Before fermentation	After fermentation
Glucosinolate umol/g	39.3	13.78
Isothiocyanate mg/g	0.43	0.04
Free gossypol mg/kg	976.4	5.72
Tannin %	1.8	1.23
Oxazolidine thione mg/g	0.67	0.12
Phytic acid %	2.56	1.76
Crude protein%	40.16	48.76
Acid Soluble Protein%	0.57	12.61
The ratio of acid-soluble protein to crude protein%	1.4	25.86
Total acid (dry basis)	-	2.74



### Usage & Dosage

1. Inoculated PerMicro Pro accounts for 3-5kg/T of materials
2. A proper amount of 1% brown sugar water at about 30 °C is firstly used to activate the product for 2-3 hours, and then mix the activated solution with the materials evenly into a tank or bag for fermentation.
3. For specific plans, please consult Perfly's professional fermentation consultants for personalized customized fermentation plans.

### Note

- 1.Keep away from heat, moisture and direct sunlight, not with toxic and harmful substances mixed.
- 2.When the product is activated, the water temperature should not be too high, preferably not more than 35 °C
- 3.This product is used as soon as possible after unpacking, the remaining parts need to tie up and keep in dark place.

### Shelf period

Under the condition of original package, the shelf life is 12 months.

Perfly can provide you with system solutions for fermented feed, including the following:

1. Technological process: according to the fermentation method (bag type of breathing film bag, trough type of breathing film bag, box type of breathing film bag, etc.), to select the appropriate combination of strains
2. Site plan: determined according to production capacity and fermentation method
3. Equipment plan: including process links and main equipment selection
4. Raw material selection, pretreatment and formula composition: remnants of agricultural and sideline products and dregs waste
5. Result judgment: help to formulate test items and test methods
6. Establishment of process parameter models, optimization of process parameters, and artificial control of the fermentation process
7. Turnkey project: including raw material fermentation technology recommendation plan, complete fermentation technology and configuration, raw material fermentation technology model establishment, special starter for substrate and mold control technology.