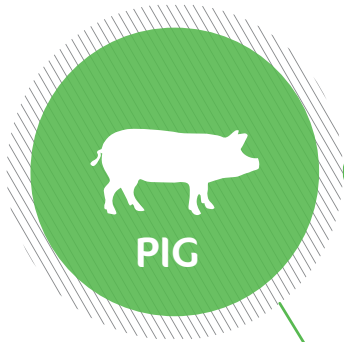




Introduction materials about heat-resistant spore probiotics of United Kingdom



PRODUCT LIST

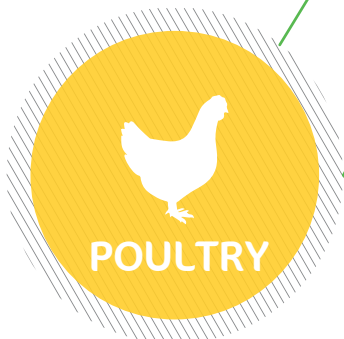


Bacillus Weaner | Probiotics for piglet

Bacillus Pro | Probiotics for pigs raised for pork

PigMax VBCF | Probiotics for pigs raised for pork

BaciMix | Probiotics for pig, poultry



NeoAvi GroMax | Probiotics for poultry raised for meat

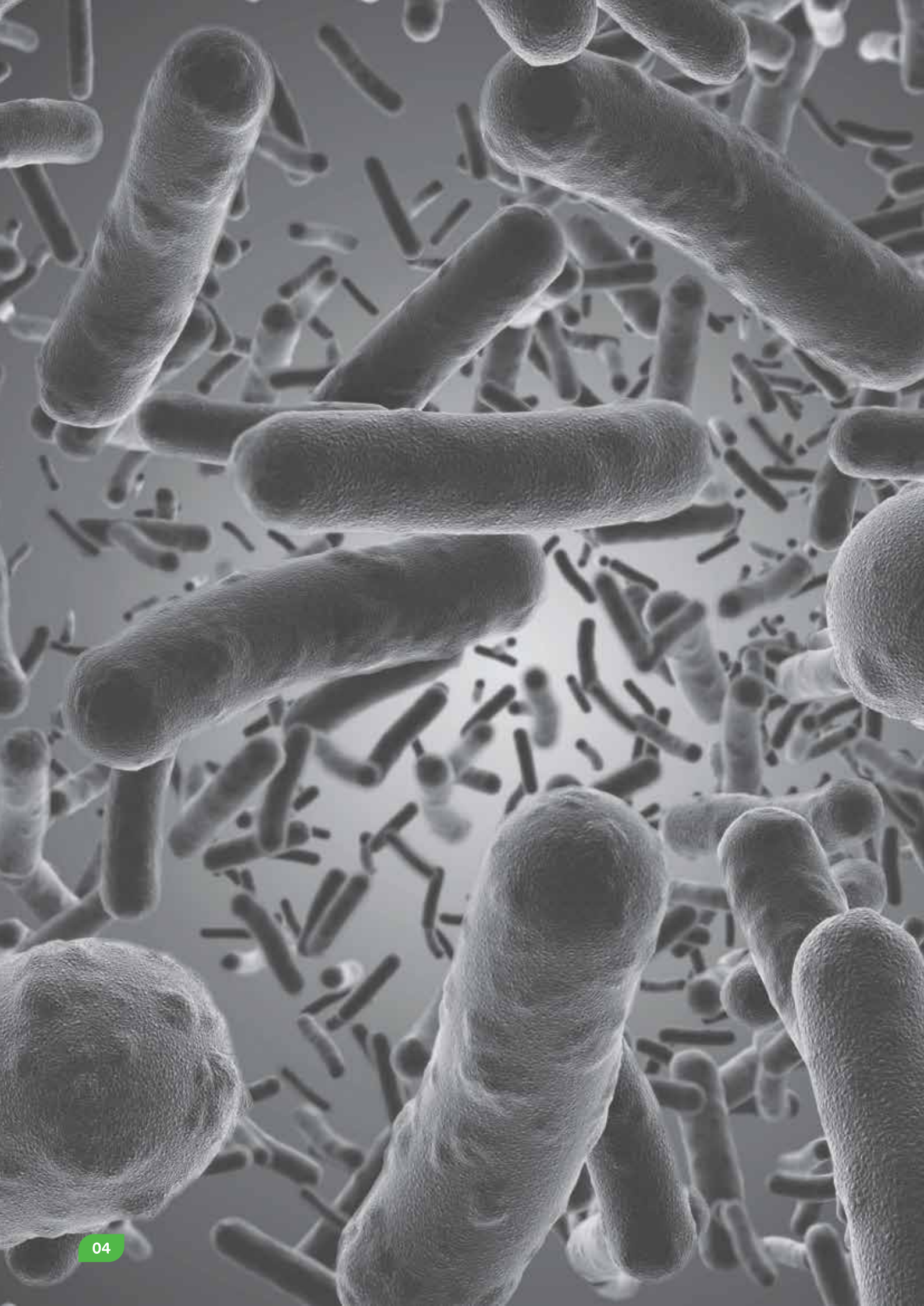
NeoAvi Layer | Probiotics for poultry raised for eggs



Products are specially designed
as per customers' requirements



Outstanding features of products





Spore probiotics advantages

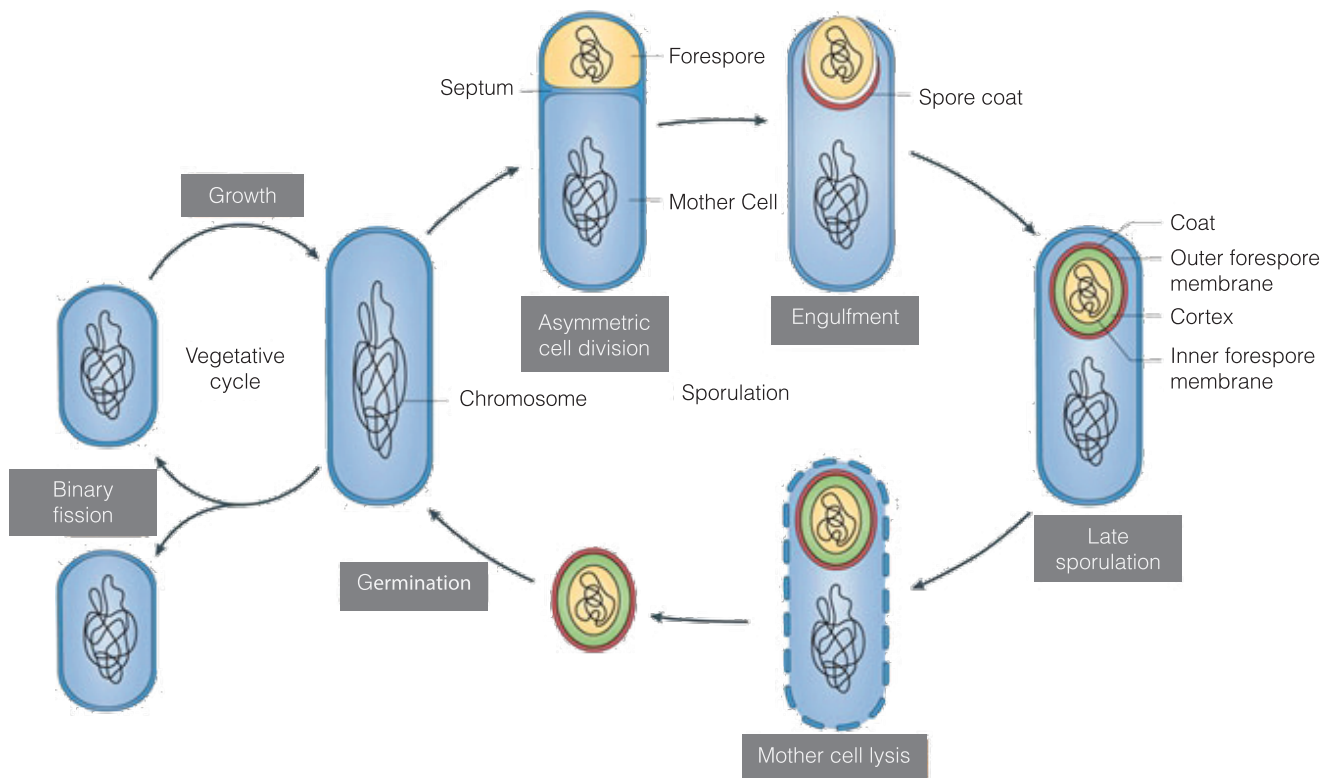


Diagram of spore-forming process

- The differences in resistance to unfavorable environmental conditions, conditions in digestive system of livestock between spores and somatic cells of *Bacillus*

Condition	Somatic cells	Spores
Temperature	Unresistant to high temperature	Resistant to high temperature up to 95°C
pH	Inactive or extinct in low pH level environment	Resistant to low pH level of stomach from 1.0 – 5.0
Stomach acid	Easily extinct by stomach acid	As agent to help spores sprout more easily
Storage condition	Difficult to store or be stored in special condition	Preserve active for many years in normal condition

PROTECTED AND EXCLUSIVE ORIGINAL STRAINS



Original probiotics strains are selected by the leading scientists in the world and identified by gene technology.

Research results are published on NCBI (National Center for Biotechnology Information), U.S.

RESISTANT TO HIGH TEMPERATURE UP TO 95°C FOR 30 MINUTES



Spore fermentation technology enables probiotic products to resist pelleting temperature up to 95°C for 30 minutes

ACTIVATE ENZYME AND IMPROVE NATURAL IMMUNITY

Enzyme

Bacillus strains used in probiotic products are capable of generating enzymes such as Phytase, Cellulase, Amylase, Protease to help livestock digest and absorb nutritious ingredients in animal feed more thoroughly such as protein, starch, lipid, minerals and essential vitamins.

MEET GMP STANDARDS



All products are manufactured in high-end and enclosed production line meeting GMP standards



ORIGINAL EXCLUSIVE PROBIOTICS STRAINS

BioSpring and SporeGen have very close cooperation in scientific research. In that very cooperation, both sides agreed to use strains. Accordingly, SporeGen will provide BioSpring with original exclusive strains for them to use in probiotics production in Vietnam.

As per that agreement, BioSpring is the only company in Vietnam that has been allowed to use strains of SporeGen for the purposes of research as well as production on all different scales. The strains of SporeGen are the results of many major research topics and projects with the participation of many leading scientists in the world, led by microbiology labs of Professor Simon Cutting. This is a key research center of Royal Holloway University of London, United Kingdom in microbiology and biotechnology.



Enzyme

ACTIVATE ENZYME AND IMPROVE IMMUNITY

- Bacillus strains used in probiotic products are capable of generating enzymes such as Phytase, Cellulase, Amylase, Protease to help lysogenic antinutritional factors, indigestible substances in feed to be enough simple and small substances for livestock absorb more easily. Feed is digested easily and stimulates livestock to eat more.
- This process also supports the release of essential substances faster, especially amino acids and minerals for the cells of immune system which focuses mainly in digestive system

Spores	Phytase (IU/ml)	Cellulase (IU/ml)	Amylase (IU/ml)	Protease (IU/ml)
	Help phosphorous compound metabolism	Help fiber metabolism	Help starch metabolism	Help protein metabolism
<i>Bacillus subtilis</i>	397.7	24.7	462.9	69.4
<i>Bacillus coagulans</i>	409	20	357.7	77.5
<i>Bacillus licheniformis</i>	390.1	21.2	336.7	26.1
<i>Bacillus indicus</i>	478.8	12.4	196.4	70.8

*Probiotics density is equivalent to 10^5 – 10^6 CFU/g

*Experimental conditions simulate immune systems of livestock



RESISTANT TO HIGH TEMPERATURE UP TO 95°C

<i>Bacillus subtilis</i>	Time	Control	Temperature		
			80°C	95°C	100°C
	10 minutes	7.9x10 ¹⁰	7.8x10 ¹⁰	7.6x10 ¹⁰	7.2x10 ¹⁰
	20 minutes		7.1x10 ¹⁰	6.8x10 ¹⁰	6.5x10 ¹⁰
	30 minutes		7.0x10 ¹⁰	6.2x10 ¹⁰	5.5x10 ¹⁰

<i>Bacillus licheniformis</i>	Time	Control	Temperature		
			80°C	95°C	100°C
	10 minutes	8.1x10 ¹⁰	8.0x10 ¹⁰	7.6x10 ¹⁰	7.2x10 ¹⁰
	20 minutes		7.8x10 ¹⁰	7.4x10 ¹⁰	7.1x10 ¹⁰
	30 minutes		7.6x10 ¹⁰	7.3x10 ¹⁰	6.8x 10 ¹⁰

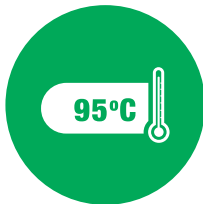
<i>Bacillus coagulans</i>	Time	Control	Temperature		
			80°C	95°C	100°C
	10 minutes	7.2x10 ¹⁰	7.1x10 ¹⁰	6.8x10 ¹⁰	6.3x10 ¹⁰
	20 minutes		7.0x10 ¹⁰	6.4x10 ¹⁰	5.2x10 ¹⁰
	30 minutes		6.7x10 ¹⁰	6.0x10 ¹⁰	4.8 x10 ¹⁰

- Spores are able to resist high temperature, even at 95°C or 100 °C. The extinction level by temperature only reduces from 10¹¹ to over 5x10¹⁰. With allowed biotechnology tolerance, that result is completely satisfactory
- Resistant time to high temperature up to 30 minutes (in experimental conditions of BioSpring laboratory)





HEAT-RESISTANT SPORE PROBIOTICS OF UNITED KINGDOM FOR PIGLET



RESISTANT TO HIGH
TEMPERATURE UP TO 95°C



PREVENT ENTERITIS,
DIARRHEA



IMPROVE NATURAL
IMMUNITY



GROW FASTER



REMOVE UNPLEASANT
SMELL FROM PIGSTIES

INGREDIENTS (FOR ONE KILOGRAM)

- Total number of Bacillus spores is more than or equal to 1×10^{12} CFU
 - Bacillus subtilis* spore
 - Bacillus coagulans* spore
 - Bacillus licheniformis* spore
- Sufficient carrier
- Humidity is less than 10%
- **Contain no hormone and antibiotics**

EFFECT

- Improve immune for digestive system, prevent diarrhea for piglet
- Improve health and prevent their intestine from harmful bacteria
- Improve appetite
- Improve feed conversion efficiency
- Red skin, silky fur
- Remove unpleasant smell from pigsties

USAGE

- Mix 100g – 300g of probiotic products for one ton feed

PROPERTIES

- Formulation: Powder
- Color: Milky
- Smell: Specific
- Solubility: Insoluble in water and organic solvents

STORAGE

- Keep at a dry & cool place, normal temperature, avoid direct light

EXPIRY DATE

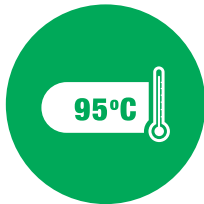
- 24 months from the date of production

PACKAGE

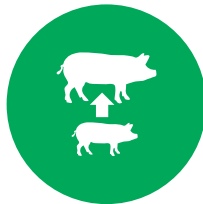
- 20kgs per bag

Bacillus^{Pro}

HEAT-RESISTANT SPORE PROBIOTICS OF UNITED KINGDOM FOR PIGS RAISED FOR PORK



RESISTANT TO HIGH
TEMPERATURE UP TO 95°C



GROW FASTER



IMPROVE MEAT QUALITY



PREVENT ENTERITIS,
DIARRHEA



REMOVE UNPLEASANT
SMELL FROM PIGSTIES

INGREDIENTS (FOR ONE KILOGRAM)

- Total number of Bacillus spores is more than or equal to 1×10^{10} CFU
 - Bacillus subtilis* spore
 - Bacillus coagulans* spore
 - Bacillus licheniformis* spore
- Sufficient carrier
- Humidity is less than 10%
- **Contain no hormone and antibiotics**

EFFECT

- Balance intestinal microbiota
- Improve natural immune system, prevent diarrhea
- Absorb well, grow fast
- Improve feed conversion efficiency, decrease FCR
- Remove unpleasant smell from pigsties
- Appearance, red meat and red muscle

USAGE

- Mix 100g – 300g of probiotic products for one ton feed

PROPERTIES

- Formulation: Powder
Color: Milky
Smell: Specific
Solubility: Insoluble in water and organic solvents

STORAGE

- Keep at a dry & cool place, normal temperature, avoid direct light

EXPIRY DATE

- 24 months from the date of production

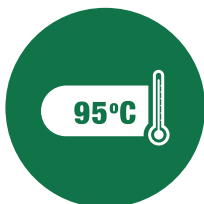
PACKAGE

- 25kgs per bag



PigMax^{VBCF}

HEAT-RESISTANT SPORE PROBIOTICS OF UNITED KINGDOM FOR PIGS RAISED FOR PORK



RESISTANT TO HIGH
TEMPERATURE UP TO 95°C



GROW FASTER



IMPROVE MEAT QUALITY



PREVENT ENTERITIS,
DIARRHEA



REMOVE UNPLEASANT
SMELL FROM PIGSTIES

INGREDIENTS (FOR ONE KILOGRAM)

- Total number of Bacillus spores is more than or equal to 4×10^{11} CFU
 - Bacillus subtilis* spore
 - Bacillus coagulans* spore
 - Bacillus licheniformis* spore
- Sufficient carrier
- Humidity is less than 10%
- **Contain no hormone and antibiotics**

EFFECT

- Balance intestinal microbiota
- Improve natural immune system, prevent diarrhea
- Absorb well, grow fast
- Improve feed conversion efficiency, decrease FCR
- Remove unpleasant smell from pigsties
- Appearance, red meat and red muscle

USAGE

- Mix 200g – 500g of probiotic products for one ton feed

PROPERTIES

- Formulation: Powder
- Color: Milky
- Smell: Specific
- Solubility: Insoluble in water and organic solvents

STORAGE

- Keep at a dry & cool place, normal temperature, avoid direct light

EXPIRY DATE

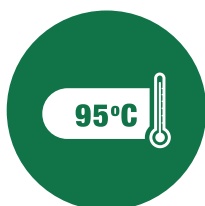
- 24 months from the date of production

PACKAGE

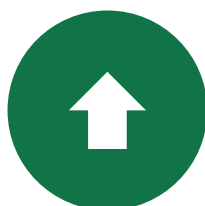
- 25kgs per bag

BaciMix

HEAT-RESISTANT SPORE PROBIOTICS OF UNITED KINGDOM FOR PIG AND POULTRY



RESISTANT TO HIGH
TEMPERATURE UP TO 95°C



GROW FASTER



IMPROVE MEAT QUALITY



PREVENT ENTERITIS,
DIARRHEA



REMOVE UNPLEASANT
SMELL FROM PIGSTIES

INGREDIENTS (FOR ONE KILOGRAM)

- Total number of Bacillus spores is more than or equal to 2×10^{10} CFU
 - Bacillus subtilis* spore
 - Bacillus coagulans* spore
 - Bacillus licheniformis* spore
- Sufficient carrier
- Humidity is less than 10%
- **Contain no hormone and antibiotics**

EFFECT

- Balance intestinal microbiota
- Improve natural immune system, prevent diarrhea
- Absorb well, grow fast
- Improve feed conversion efficiency, decrease FCR
- Remove unpleasant smell from pigsties
- Appearance, red meat and red muscle

USAGE

- Mix 50g – 200g of probiotic products for one ton feed

PROPERTIES

- Formulation: Powder
Color: Milky
Smell: Specific
Solubility: Insoluble in water and organic solvents

STORAGE

- Keep at a dry & cool place, normal temperature, avoid direct light

EXPIRY DATE

- 24 months from the date of production

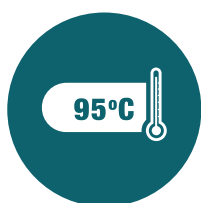
PACKAGE

- 25kgs per bag

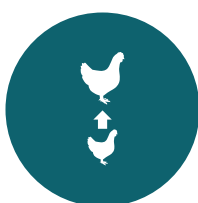


NeoAvi GroMax

HEAT-RESISTANT SPORE PROBIOTICS OF UNITED KINGDOM FOR POULTRY RAISED FOR MEAT



RESISTANT TO HIGH
TEMPERATURE UP TO 95°C



GROW FASTER



IMPROVE MEAT QUALITY



PREVENT ENTERITIS,
DIARRHEA



REMOVE UNPLEASANT
SMELL FROM CHICKEN COOPS

INGREDIENTS (FOR ONE KILOGRAM)

- Total number of Bacillus spores is more than or equal to 1×10^{10} CFU
 - Bacillus subtilis* spore
 - Bacillus coagulans* spore
 - Bacillus licheniformis* spore
- Sufficient carrier
- Humidity is less than 10%
- **Contain no hormone and antibiotics**

EFFECT

- Balance intestinal microbiota
- Improve natural immune system, prevent diarrhea, enteritis and cephaloedema caused by E.coli
- Improve feed digestion, productivity and meat quality
- Restrict bacteria from fermentation putride, remove unpleasant smell from chicken coops, prevent respiratory diseases

USAGE

- Mix 100g – 300g of probiotic products for one ton feed

PROPERTIES

- Formulation: Powder
- Color: Milky
- Smell: Specific
- Solubility: Insoluble in water and organic solvents

STORAGE

- Keep at a dry & cool place, normal temperature, avoid direct light

EXPIRY DATE

- 24 months from the date of production

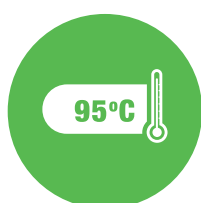
PACKAGE

- 25kgs per bag



NeoAvi Layer

HEAT-RESISTANT SPORE PROBIOTICS OF UNITED KINGDOM FOR POULTRY RAISED FOR EGGS



RESISTANT TO HIGH
TEMPERATURE UP TO 95°C



IMPROVE YOLK COLOR



IMPROVE EGG OUTPUT,
EGG QUALITY



PREVENT ENTERITIS,
DIARRHEA



REMOVE UNPLEASANT
SMELL FROM CHICKEN COOPS

INGREDIENTS (FOR ONE KILOGRAM)

- Total number of Bacillus spores is more than or equal to 1×10^{10} CFU
Bacillus subtilis spore
Bacillus licheniformis spore
Bacillus coagulans spore
Bacillus indicus spore
- Sufficient carrier
- Humidity is less than 10%
- **Contain no hormone and antibiotics**

EFFECT

- Balance intestinal microbiota
- Improve natural immune system, prevent diarrhea, enteritis and cephaloedema caused by E.coli
- Improve feed digestion, improve output and quality of eggs
- Restrict bacteria from fermentation putride, remove unpleasant smell from chicken coops, prevent respiratory diseases

USAGE

- Mix 100g – 300g of probiotic products for one ton feed

PROPERTIES

- Formulation: Powder
 Color: Milky
 Smell: Specific
 Solubility: Insoluble in water and organic solvents

STORAGE

- Keep at a dry & cool place, normal temperature, avoid direct light

EXPIRY DATE

- 24 months from the date of production

PACKAGE

- 25kgs per bag



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