

ECOBIOL[®] SOLUBLE PLUS

Application Guide





Drinking water quality plays a key role in efficient livestock production. Different hygienic and physiochemical factors can affect the color, taste and odor of water, with potentially negative effects on the animals' water intake and health. Additionally, contaminants in drinking water can leave residues in meat or eggs. For these reasons, it is crucial to maintain a clean and fresh water supply.

Water quality is difficult to judge accurately, and can differ between farms. To maintain an adequate assessment of drinking water quality, it is important to conduct routine laboratory tests to detect chemical and biological contaminants.

The growth performance of poultry and swine depends on many factors alongside water intake. For example, the animals may be exposed to stressors such as change of feed or vaccinations. Blends of free and buffered organic acids together with medication programs are commonly used in farms to counter the effects of stressors and improve livestock performance. However, medication can have a negative effect on microbial balance in the gastrointestinal tract. Natural alternatives to medication, in combination with organic acids, are consequently an interesting option for poultry and swine producers, with the additional advantage that they can also increase water intake.

This guide is intended to assist farmers in ensuring good water quality on their farms. In the following pages, you will find details on the most useful water quality indicators and how to conduct maintenance of the drinking system. In addition, you will find guidelines for the application of Ecobiol® Soluble Plus.

SPECIFICATION

Bacillus amyloliquefaciens CECT 5940

Spore count min. 1×10^{10} CFU / g

STABILITY



Stable for
2 years under the
recommended
storage
conditions



Product can stay
in the solution*
for at least
4 days without
loosing viability



Normal
environmental
temperature
changes will not
affect product
efficacy



* Please refer to ECOBIOL® ON TREATED WATER section for the applicable water solutions.

STORAGE RECOMMENDATION



Store in a dark and dry place
at room temperature in the
original sealed packaging



After opening, close the
bag as good as possible and
store accordingly

PACKAGING

1kg





DOSAGE



Add min.
50 g powder
per 1000 L
water

APPLICATION PROCEDURE



Solution
to be applied
daily at your
convenience



Application
time /
frequency
depends
on water
consumption

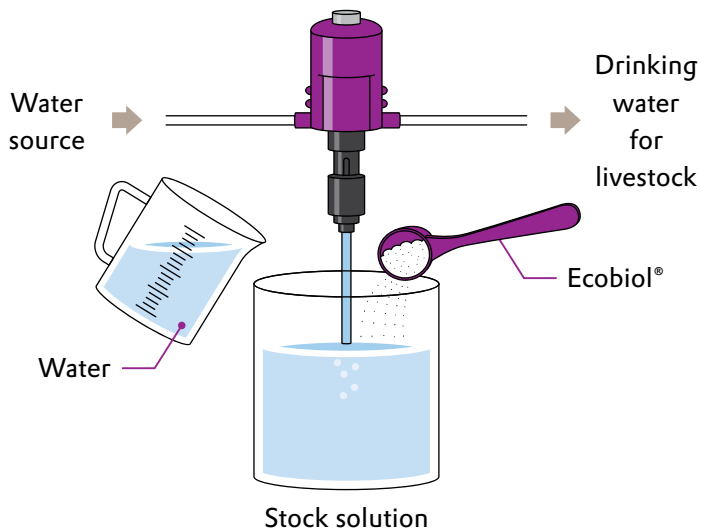


Can be
used with
water
application
system



Applied to
drinking
water

APPLICATION WITH WATER POWERED DOSING PUMP



POSSIBLE DILUTIONS

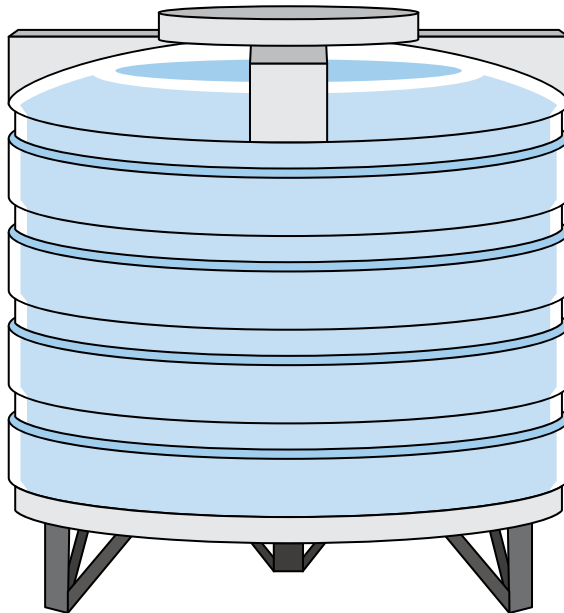
1 : 50 1 : 64 1 : 100 1 : 128 1 : 200

	Example 1. Dilution at 2%	Example 2. Dilution at 1.5%
Dosificator Setting	1 : 50	1 : 64
Target Concentration	0.05 g / L	0.05 g / L
Stock Tank Size	20 Liters	50 Liters
Product Amount Needed	50 grams Ecobiol® in 20 liters of water	160 grams Ecobiol® in 50 liters of water



APPLICATION WITH WATER TANK

50 g Ecobiol®
Soluble Plus



1000 L water tank



WATER QUALITY CHARACTERISTICS

Test the water quality regularly – biological and chemical analysis – to check for bacterial contamination, hardness / softness, mineral content etc.

Water Quality; standards for poultry¹

CHEMICAL ANALYSES

Parameter	Maximum Level	Optimal Advised Level
pH	4-9	4.5-7
Conductibility	< 2100 μ S / cm	< 1200 μ S / cm
Total Hardness	< 35.6 °F or 20 °D	< 12 °D or 15 °E or 21 °F
Fluoride	< 1.5 mg F / l	NA
Chloride	< 250 mg Cl / l	NA
Phosphate	< 5.0 mg P ₂ O ₅ / l	NA
Sulphate	< 50 mg SO ₄ / l	NA
Nitrite	< 1.0 mg NO ₂ / l	< 0.5 mg NO ₂ / l
Nitrate	< 100 mg NO ₃ / l	< 50 mg NO ₃ / l
Ammonium	< 0.5 mg NH ₄ / l	NA
Iron	< 2.5 mg Fe / l	< 1 mg Fe / l
Manganese	< 2.0 mg Mn / l	NA
Calcium	< 270 mg Ca / l	NA
Magnesium	< 50 mg Mg / l	NA
Salt Content (Sodium)	< 2000 mg / l	< 1000 mg / l
Physical Aspect	Clear, colorless and odorless	Clear, colorless and odorless

¹ Source: Schwartz, D. L., "Water Quality," VSE, 81c., Penn. State Univ. (mimeographed); and R. Waggoner, R. Good, and R. Good, "Water Quality and Poultry Performance," in Proceedings AVMA Annual Conference, July, 1984



BACTERIOLOGICAL ANALYSES

Parameter	Maximum Level	Optimal Advised Level
Total Counts at 22 °C	< 100.000 / ml	< 1000 / ml
Total Counts at 37 °C	< 100.000 / ml	< 100 / ml
Total Coliforms	< 10.000 / 100 ml	0
<i>E. coli</i>	< 100 / ml	0
<i>Fecal Streptococci</i>	0 / 100 ml	0
Sulphite Reducing Clostridia	0 / 20 ml	0
<i>Clostridium perfringens</i>	0 / 100 ml	0

! If the results for water quality analyses don't fall within the accepted ranges (non conformity), it is advised to treat the water.





ECOBOL® ON TREATED WATER

WITH CHLORINATION

The disinfection activity of chlorine depends on the presence of FREE Chlorine (Cl). This depends on:



Only active at pH
between 6-7.5



Contact time
> 20 minutes



Temperature
> 15 °C



Hardness, conductivity,
organic contamination,
presence of bio-film



FREE chlorine concentration
> 0.5 ppm at end of
drinking line



WITH HYDROGEN PEROXIDE



Works better at $\text{pH} < 7$



Very strong oxidator



Product of 50% stabilized
 H_2O_2 is economically
the best



Concentration at the end of
drinking line must be
30 ppm H_2O_2



Can be used together
with acids



At lower dosages it reduces
bacteria and prevent
development of biofilms



At higher dosages it
efficiently removes biofilm



CONTINUOUS TREATMENT OF DRINKING WATER



During whole
cycle



While animals
are present

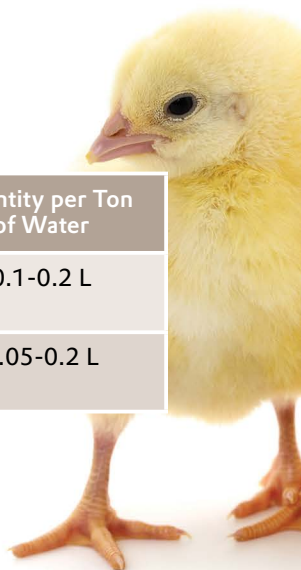


Goal: continuous
treatment*

- Moderate concentration needed, the animals drink it
- By preference via dosing pump on all water in farm

OPTIONS

Product	Quantity per Ton of Water
Hydrogen Peroxide 50%	0.1-0.2 L
Hydrogen Peroxide 20% + Peracetic Acid 5%	0.05-0.2 L

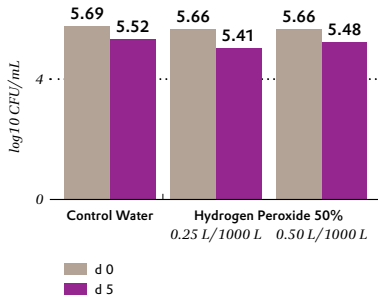


**Prevent growth of bacteria, yeast and molds; prevent formation bio-film; prevent formation of scale; reduction of Acid Binding Capacity (ABC). This can be important if the feed is not acidified enough.*

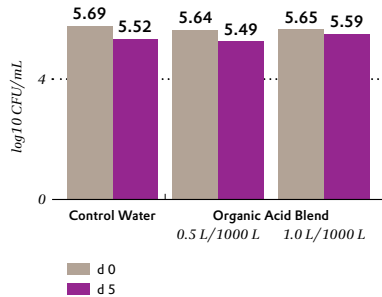


EFFECT OF DIFFERENT ADDITIVES ON GERMINATION OF ECOBIOL® SPORES IN THE WATER

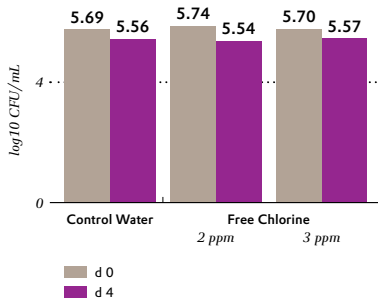
HYDROGEN PEROXIDE 50%



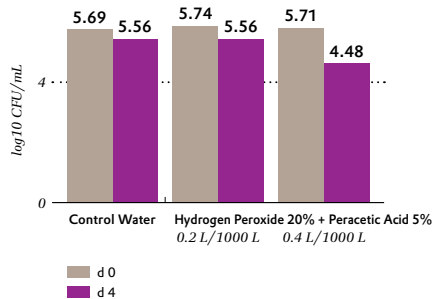
ORGANIC ACID BLEND



FREE CHLORINE

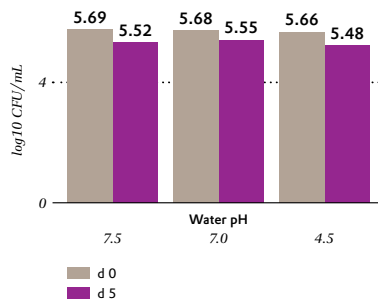


HYDROGEN PEROXIDE 20% + PERACETIC ACID 5%



EFFECT OF CHANGING PH OF WATER ON GERMINATION OF ECOBIOL® SPORES IN THE WATER

WATER PH





NO CLOGGING OF WATER PIPES

Clogging of drinking lines or nipples with Ecobiol®
are not expected.



NO CLOGGING
OF WATER PIPES



INTERMEDIATE CLEANING



Periodically or
after treatment*



While animals
are present



Goal: preventive
cleaning

- Medium concentration needed, the animals drink it
- Mainly done via the medicator

OPTIONS

Product	Quantity per Ton of Water
Hydrogen Peroxide 50%	0.25-0.5 L
Hydrogen Peroxide 20% + Peracetic Acid 5%	0.2-0.4 L

* Vaccination, antibiotics, etc.

ECOBIO[®] COMPATIBILITY WITH OTHER PRODUCTS



Ecobiol[®] is compatible to be used together with various products depending on the dose and type:



Antibiotics*



Organic acids



Disinfectants
incl. chlorine,
hydrogen
peroxide



Vaccines**

**Ecobiol[®] is compatible with any antibiotics when used at growth promotion levels.*

Ecobiol[®] is compatible with any antibiotic of gram negative spectrum: i.e. Colistin.

Ecobiol[®] is not compatible with broad spectrum antibiotics or gram + antibiotics when given at therapeutic dose.

***In order to understand how to best use Ecobiol[®] in your practice, in combination with antibiotics and vaccines, please contact our Gut Health Solution technical support.*



NOTES



**Evonik (SEA) Pte Ltd**

3 International Business Park
#07-18 Nordic European Centre
Singapore 609927

Phone: +65 6809 6666

animal-nutrition@evonik.com
www.evonik.com/animal-nutrition



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