



# VSP ZEO FEED

Natural Zeolite Feed Additive



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VSP ZEO Feed is a natural feed additive composed of zeolite-clinoptilolite mineral (hydrated sodium-potassium-calcium-alumino-silicate). It is produced in Manisa, Turkey from one of the largest and purest clinoptilolite reserves in the world.

The active matter of VSP Zeo Feed is clinoptilolite. By means of their high cation exchange capacity (CEC), clinoptilolite crystals absorb and bind (capture) gases, toxins and heavy metals from the surroundings and thereby provide healthy nutrition to animals. This in turn prevents these pollutants from entering the human food chain!

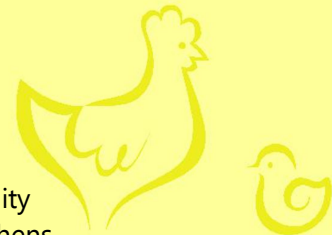
### FOR BEEF AND DAIRY CATTLE, SHEEP AND PIGS

- Enables the digestive system to function better
- Increases live weight
- Improves the health of newborn animals
- Enhances meat quality
- Increases milk and fat ratios



### FOR POULTRY

- Provides a healthy and effective diet
- Prevents deformities and allows healthy development
- Shortens the period required for cutting
- Increases egg productivity
- Provides a significant increase in egg size, egg weight and eggshell quality
- Prevents decrease in egg productivity, normally associated with ageing hens



### FOR FISH

- Helps digestion
- Decreases mortality rates significantly
- Improves SGR and decreases FCR values
- Increases the quality of feed by reducing mould formation
- Due to its ability to absorb oil, present in fish feed, it prevents oxidation and deterioration during storage



### FEED PRODUCTION AND STORAGE

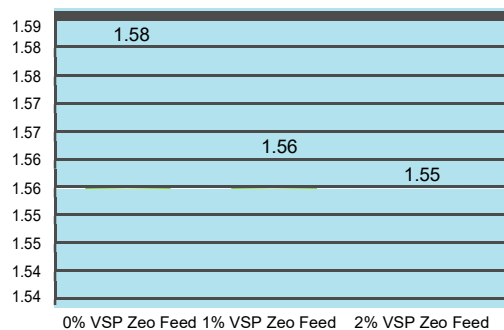
- Improves quality of the feed, prevents lump formation and decaying by absorbing moisture.
- Provides energy savings during the pelleting process, thereby decreases the cost of feed.
- Prevents oxidation and degradation during storage.
- Retains (captures) the toxins and heavy metals contained in raw feed ingredients.

\* Please consult the manufacturer for dosage recommendations.



## STUDIES ON BROILERS

Ankara University, Turkey (Ross 308)



Effects of clinoptilolite (VSP Zeo Feed) supplementation on FCR after 35 day experimental period

## STUDIES ON TOXICOLOGY

Trilogy Analytical Lab, Washington, USA

Sample Description	0-200 microns
	Aflatoxin
% Adsorption	99,9
	99,8
	99,9
% Adsorption Average	99,9
% Desorption	0,1
	0,0
	0,1
% Desorption Average	0,1
% Efficiency	99,8

Inclusion Rate : 0,2kg/t

Toxin Concentration : 100ppb

Adsorption pH : 3,0

Desorption pH : 6,5

Reference:

Trilogy Analytical Lab Internal SOP 12-149

## STUDIES ON LAYING HENS

VNITIP, Moscow, Russia (Cross SP-789)

Animal Group	Feeding Characteristics
1 - Control	Control diet (CD) - 0% VSP Zeo Feed
2 - Experimental	CD 98% + 2% VSP Zeo Feed (0-1mm)
3 - Experimental	CD 100% + 2% VSP Zeo Feed (0-1mm)
4 - Experimental	CD 100% + 0,2% VSP Zeo Feed (0-200 microns)
5 - Experimental	CD 100% + 0,5% VSP Zeo Feed (0-200 microns)

Parameter	Group				
	1. CG	2. EG	3. EG	4. EG	5. EG
No of eggs laid (total)	2.371	2.375	2.415	2.446	2.467
Amount of laying %	85.9	86.1	87.5	88.6	89.4
% to control	100.0	100.2	101.6	102.7	103.5
Average egg weight , g	64.93	64.84	64.99	64.85	64.72
Diet fed, kg	321.3	320.7	322.5	323.5	324.8
Feed consumption, g/bird/day	116.4	116.2	116.8	117.2	117.7
Feed per 1 kg of egg mass, kg	2.09	2.08	2.05	2.03	2.03
% to control	100.0	99.5	98.1	97.1	97.1

## STUDIES ON SHEEP

VIZh, Moscow, Russia

Animal Group	Feeding Characteristics
1 - Control	Main diet (MD) - 0% VSP Zeo Feed
2 - Experimental	MD + 0,2% VSP Zeo Feed (0-200 microns)
3 - Experimental	MD + 0,4% VSP Zeo Feed (0-200 microns)
4 - Experimental	MD + 2% VSP Zeo Feed (0-1 mm)

Indicator	1CG	2EG	3EG	4EG
Average Daily increase of live weight, g	160,0 ± 6,36	178,3 ± 3,70	187,3 ± 2,34	167,2 ± 4,77

## STUDIES ON PIGS

VIZh, Moscow, Russia

Animal Group	Feeding Characteristics
1 - Control	Main diet (MD) - 0% VSP Zeo Feed
2 - Experimental	MD + 1% VSP Zeo Feed (0-1 mm)
3 - Experimental	MD + 2% VSP Zeo Feed (0-1 mm)
4 - Experimental	MD + 0,4% VSP Zeo Feed (0-200 microns)

Parameter	Group			
	1CG	2EG	3EG	4EG
Live weight at the beginning, kg	61,03 ± 2,74	66,33 ± 2,80	65,13 ± 1,39	64,50 ± 1,14
Live weight at the end, kg	110,53 ± 4,99	121,37 ± 1,59	118,17 ± 2,75	116,47 ± 2,00
Absolute weight gain, kg	49,50 ± 2,39	55,03 ± 3,07	53,03 ± 1,43	51,97 ± 2,20
Average daily weight gain, g	811,48 ± 39,12	902,19 ± 50,41	869,40 ± 23,46	851,91 ± 36,14
in % of control group	100,0	111,2	107,1	105,0

\* Scientific reports for different animal species are available upon request.



# VSP ZEO FEED

Natural Zeolite Feed Additive

Product Name	VSP Zeo Feed (produced from natural zeolite-clinoptilolite)
Chemical Formula	$(\text{Na}_{0.5}\text{K}_{2.5})(\text{Ca}_{1.0}\text{Mg}_{0.5})(\text{Al}_6\text{Si}_{30})\text{O}_{72}\cdot 24\text{H}_2\text{O}$
Chemical Name	Hydrated Sodium - Potassium - Calcium - Alumino - Silicate
Grain Size	<50 $\mu\text{m}$ , <100 $\mu\text{m}$ , <150 $\mu\text{m}$ , <200 $\mu\text{m}$ , <600 $\mu\text{m}$ , 0-1 mm, 0,2-1 mm
Water Retention Capacity	35 - 45 %
Cation Exchange Capacity (CEC)	1,6-2,0 meq/g $\text{NH}_4^+$ - Ammonium (Kjeldahl distillation method)
Ion Selectivity	$\text{Pb} > \text{Cs} > \text{NH}_4^+ > \text{Ba} > \text{Sr} > \text{Hg}$
pH	6,5-7,5
Package	25 - 50 kg bags, big bags, bulk

Zeolites are defined as safe materials by World Health Organization (WHO). FDA (Food and Drug Administration 21 CFR 582,2729) describes zeolites in the group of functional additives, binders and anticaking agents. Use of zeolites as a feed additive is permitted by EU Feed Regulations, in the group of binders and anti-caking agents (70/524/EEC and 1831/2003).



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