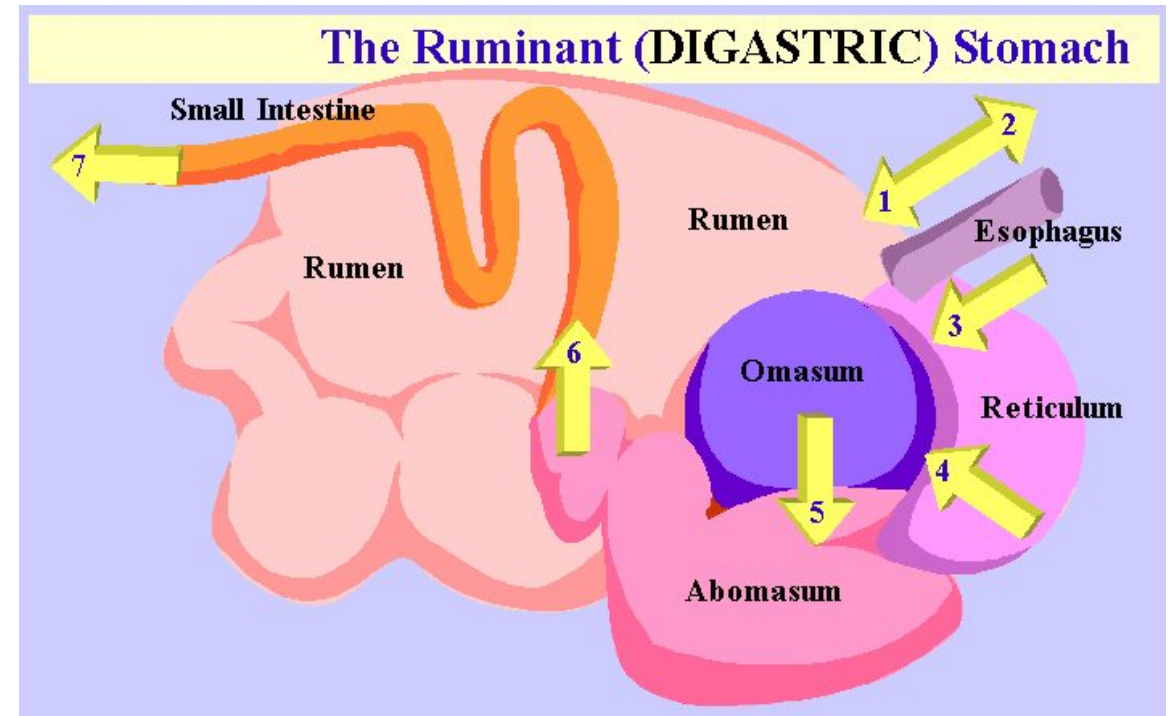


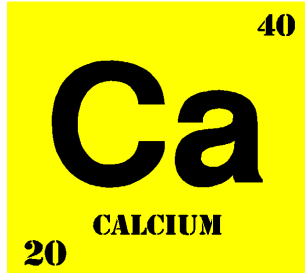
# Ruminant Health, Vitamin, Minerals & Nutrition

Presented by Marty Ulrich

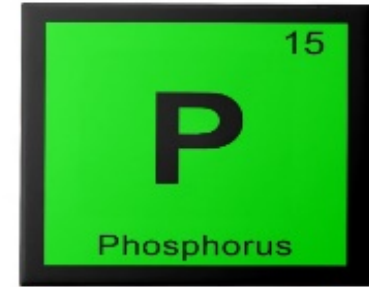
# The Rumen

- Ruminants require a number of minerals for optimal growth and reproduction. Selecting the correct mineral supplement is important for maintaining healthy animals, and optimal growth and reproduction. Minerals not provided by feed can easily and inexpensively be supplied with a simple mineral supplement.
- The rumen is the largest compartment on the mature ruminant
- The abomasum is the largest on the immature ruminant
- The rumen works differently in baby calves. The rumen is smallest in a calf. The cow will give all her minerals to the calf before taking them for herself.

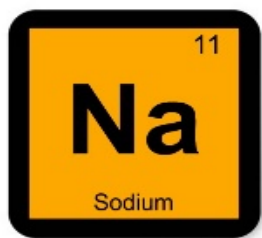




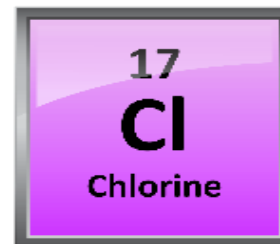
# Calcium & Phosphorus



- Major mineral components of the skeleton
- Ninety-nine percent of total body calcium and 80% of the total body phosphorus are stored in the skeletal system. The skeletal stores of calcium. Phosphorus is used to meet short-term dietary inadequacies. Long-term deficiency of either can cause bones to weaken and even break.
- Calcium and phosphorus also play important roles in other bodily functions. A decrease can cause a decrease in weight gain and/or a decrease in efficiency of gain. During lactation, low amounts of either will reduce milk production. A superior milking cow requires three times more calcium than a non-lactating cow.
- A phosphorus deficiency can delay puberty in heifers and can delay mature beef cows from returning to heat following parturition.



# Sodium & Chlorine



- These provide for the proper function of the nervous and muscular systems. They help regulate body PH and the amount of water retained in the body.
- Salt really is the stuff of life for every cell in an animal's body. Sodium is critical to maintaining osmotic balance and PH in every living cell.
- Salt is required in relatively large amounts, compared to other minerals.
- Sodium plays a key role in the mechanism by which cells move nutrients back and forth across their membrane. It's necessary for transmission of nerve impulses -those signals responsible for contraction of skeletal, heart and digestive tract muscles. Sodium is a major component of saliva, and helps buffer acid during ruminal fermentation.
- Because salt affects how the body functions at a cellular level the most common and most costly result of salt deficiency is reduced performance. This is seen in milk production, weight gain, and efficiency of feed conservation. Every aspect of performance is affected. Growth, fertility and reproduction, and milk production decline. Cattle simply don't perform to their genetic potential.



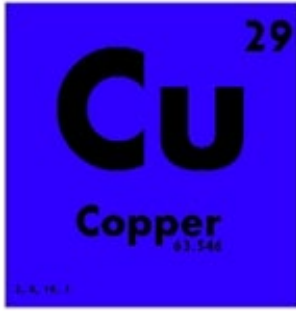
# Magnesium

- This is essential for the proper enzyme and nervous system function and for carbohydrate metabolism.
- A magnesium deficiency is uncommon except for cows grazing lush-growth fescue or small grain pastures during the late winter and early spring, which may cause grass tetany. Grass tetany usually occurs following an extended period of cold weather combined with high levels of nitrogen and potassium fertilization. Mature lactating cows are particularly susceptible to grass tetany.



# Cobalt

- Essential trace mineral for ruminant animals.
- The main function of cobalt in ruminants is to be a component of vitamin B12, also known as cobalamin.
- Vitamin B12 is an essential cofactor for the function of two enzymes



# Copper

- The most common micromineral deficiency in grazing ruminants is Copper. Copper is an important component of the many enzyme systems essential for normal growth and development.
- Deficiency signs include reduced fertility, depressed immunity and reduced pigmentation of hair (black hair may turn to red tinted). Dietary deficiencies can occur, but most deficiencies are caused by the consumption of antagonists, which reduces copper absorption.
- Copper should be supplemented as copper sulfate, tribasic copper chloride or an organic complexed form because copper oxide is very poorly absorbed.

# Iodine

- Iodine is an essential mineral for function of the thyroid hormones that regulate energy metabolism.
- The first sign of iodine deficiency is goiter in newborn calves

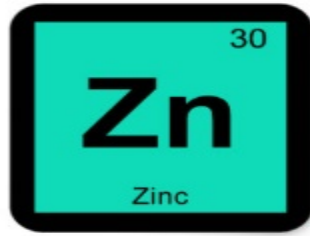






# Selenium

- Selenium deficiency causes white muscle disease (similar to muscular dystrophy) in newborn calves. Selenium deficiency can also cause calves to be weak at birth increase susceptibility to calf hood diseases like scours, increased rates of retained placentas, and poor reproductive performance. Selenium is generally added to mineral mixtures in the form of sodium selenite.
- Selenium can be toxic and should be used in a premixed form only.
- The FDA allows selenium to be used at a level not to exceed 0.3 ppm of the dry matter in the total diet.



# Zinc

- Zinc is a component of many enzymes and is important for immunity, male reproduction, and skin and hoof health.
- Calves have a limited ability to store zinc and supplementation is necessary.
- Zinc absorption is closely tied to copper absorption, and the zinc to copper ratio should be kept at approximately 3:1. In addition, high levels of iron can decrease zinc absorption.
- Absorption of zinc decreases once the ratio of iron to zinc exceed 2:1.

# Chelated Minerals

- Chelates are organic forms of essential trace minerals such as [copper](#), [iron](#), [manganese](#) and [zinc](#).
- [Animals](#) absorb, digest and use mineral chelates better than inorganic minerals. This means that lower concentrations of mineral chelates can be used in animal feeds, rather than higher doses of inorganic minerals. In addition, animals fed chelated sources of essential trace minerals excrete lower amounts in their feces. Mineral chelates offer health and welfare benefits in animal nutrition

# Vitamin A

- Vitamin A helps skin and mucous membrane health.
- Vitamin A requirements are usually met by grazing fresh, green growing grass.
- Oxidation deteriorates Vitamin A.
- The only time to supplement Vitamin A is when using only stored feeds opposed to natural feeds.
- The minimum amount of vitamin A should be approximate 120000 per pound of mineral. Vitamin A can also be added to the grain mixture to provide 15000 to 30000 IU per head per day, depending on individual requirements.

# Vitamin D

- Vitamin D aids the absorption of calcium and phosphorus from the intestine.
- Signs of vitamin D deficiency are similar to a calcium or phosphorus deficiency. Most calves exposed to direct sunlight synthesize enough vitamin D, but calves in a covered environment may need supplemental vitamin D.

# Vitamin E

- Vitamin E is usually present in the diet in sufficient quantities. However, a selenium deficiency could lead to an apparent deficiency of vitamin E.
- Vitamin E can be helpful for short-term periods of stress that may occur when calves are con-mingled and transported at weaning

# Reading Mineral Labels

## Super Range Mineral

### PURPOSE

A Mineral Supplement for Beef Cattle on Pasture

### \* GUARANTEED ANALYSIS \*

Calcium (Min)	14.3%
Calcium (Max)	17.1%
Phosphorus (Min)	8.0%
Salt (Min)	11.0%
Salt (Max)	13.0%
Magnesium (Min)	1.5%
Sulfur (Min)	.90%
Potassium (Min)	1.0%
Cobalt (Min)	35 ppm
Copper (Min)	2,000 ppm
Iodine (Min)	50 ppm
Iron (Min)	1,500 ppm
Manganese (Min)	2,200 ppm
Selenium (Min)	25 ppm
Zinc (Min)	4,000 ppm
Vitamin A (Min)	100,000 IU
Vitamin D-3 (Min)	10,000 IU
Vitamin E (Min)	100 IU

### \* INGREDIENT STATEMENT \*

Monocalcium Phosphate, Dicalcium Phosphate, Salt, Processed Grain By-products, Calcium Carbonate, Molasses Products, Magnesium Oxide, Potassium Chloride, Zinc Sulfate, Copper Sulfate, Manganese Sulfate, Vitamin A Supplement, Cholecalciferol (D-Activated Animal Sterol - Source of Vitamin D-3), Vitamin E Supplement, Artificial Flavor, Ethylenediamine Dihydrochloride, Sodium Selenite, Cobalt Carbonate, Natural and Artificial Flavors.

### \* CAUTION \*

Follow feeding directions at all times. Provide free-choice to cattle on pasture. Consumption will vary depending on quality and quantity of available forage. Normal intake will range between 3 to 4 oz. per head per day. Provide plenty of fresh water and forage at all times.

Product contains added selenium. Intake of supplemental selenium should not exceed 0.3 parts per million on a complete diet basis or a total of 3 milligrams per animal per day.

**WARNING:** This product contains elevated copper levels. Do not feed to sheep or goats as this may result in copper toxicity.

Manufactured by  
Super Range Mineral Company, Inc.  
Mineral Maker, TX

Net Wt. 50 lbs.

**SNOHOMISH CO CATTLEMEN'S 10-5**  
(A SUPPLEMENTAL FEED FOR BEEF CATTLE)

Guaranteed Analysis			
SALT (NaCl)	Not Less Than	34.5 %	
SALT (NaCl)	Not More Than	41.4 %	
CRUDE PROTEIN	Not Less Than	2.8 %	
CRUDE FIBER	Not More Than	2 %	
CALCIUM (Ca)	Not Less Than	10.0 %	
CALCIUM (Ca)	Not More Than	12.0 %	
PHOSPHORUS (P)	Not Less Than	5.0 %	
MAGNESIUM (Mg)	Not Less Than	3.0 %	
SODIUM (Na)	Not More Than	15.3 %	
POTASSIUM (K)	Not Less Than	0.1 %	
COPPER (Cu)	Not Less Than	2,144.6 PPM	
MANGANESE (Mn)	Not Less Than	3,597.9 PPM	
SELENIUM (Se)	Not Less Than	102.9 PPM	
SELENIUM (Se)	Not More Than	121.0 PPM	
ZINC (Zn)	Not Less Than	6,146.3 PPM	
VITAMIN A	Not Less Than	399,891 IUS/LB	
VITAMIN D3	Not Less Than	40,783 IUS/LB	
VITAMIN E	Not Less Than	397 IUS/LB	

**Ingredients**  
SODIUM CHLORIDE, MONOCALCIUM AND DICALCIUM PHOSPHATE, CALCIUM CARBONATE, CORN DISTILLERS DRIED GRAINS, MAGNESIUM OXIDE, SODIUM SELENITE, MINERAL OIL, DRIED CANE MOLASSES, SACCHAROMYCES CEREVISIAE YEAST, COPPER SULFATE, ZINC OXIDE, MANGANOUS OXIDE, SILICON DIOXIDE, SELENIUM YEAST, ZINC AMINO ACID CHELATE, VITAMIN E SUPPLEMENT, IRON OXIDE, VITAMIN A SUPPLEMENT, ETHYLENEDIAMINE DIHYDROCHLORIDE, NATURAL AND/OR ARTIFICIAL FLAVORING, VITAMIN D3 SUPPLEMENT, COBALT SULFATE.

**Directions For Use:**  
Offer free choice to beef cattle on pasture at a rate not to exceed .87 ounces per head per day. This rate of intake provides 3 mg of supplemental selenium per head per day.

**CAUTION: FOLLOW LABEL DIRECTIONS. FEEDING ADDED SELENIUM AT LEVELS IN EXCESS OF 0.3 PPM IN THE TOTAL DIET IS PROHIBITED. BLEND THIS PREMIX AT A RATE NOT TO EXCEED 4.96 LB/TON TO PROVIDE 0.3 PPM SELENIUM IN THE TOTAL DIET.**

Manufactured for:  
Elenbaas Company  
411 W. Front St.  
Sumas, WA 98295  
www.elenbaasco.com

**Net Weight 50 LB (22.68 KG)**

PRODUCTS EXPIRES 3 MONTHS FROM LISTED DATE  
OF MANUFACTURE ON FRONT OR BACK OF BAG

116  
470-ELNBAS67 SNOHOMISH CO CATTLEMEN'S 10-5

### DRUG CLAIM

For increased rate of weight gain in pasture cattla/laughter, stocker feeder cattle and dairy and beef replacement heifers).

### ACTIVE DRUG INGREDIENT:

BOVATEC (as Lasalocid Sodium) ..... 1440 g/ton  
(Each lb contains 720 mg)

### GUARANTEED ANALYSIS:

Calcium (Min)	12.50%
Calcium (Max)	18.50%
Phosphorus (Min)	6.50%
Salt (Min)	18.50%
Salt (Max)	21.50%
Magnesium (Min)	2.50%
Potassium (Min)	2.00%
Sulfur (Min)	0.85%
Cobalt (Min)	20 ppm
Copper (Min)	1100 ppm
Iodine (Min)	110 ppm
Iron (Min)	3000 ppm
Manganese (Min)	2600 ppm
Selenium (Min)	23 ppm
Zinc (Min)	4400 ppm
Vitamin A (Min)	225,000 IU/Lb.
Vitamin D-3, (Min)	20,000 IU/Lb.
Vitamin E, (Min)	50 IU/Lb.

### INGREDIENT STATEMENT:

Dicalcium phosphate, monocalcium phosphate, salt, magnesium oxide, magnesium limestone, calcium carbonate, processed grain by-products, potassium chloride, potassium sulfate, magnesium sulfate, zinc oxide, manganese sulfate, manganese oxide, copper sulfate, calcium iodate, cobalt sulfate, sodium selenite, vitamin A supplement, vitamin D-3 supplement, vitamin E supplement, niacin, choline chloride, riboflavin supplement, synthetic red iron oxide and molasses products.

### FEEDING DIRECTIONS:

Thoroughly mix VMS BEEF BUILDER W/BOVATEC<sup>®</sup> MEDICATED mineral with non-medicated feeds as grain and/or roughage to provide 30-400 g/ton Bovatec<sup>®</sup> in the pasture supplement. Feed continuously to provide not less than 60 mg nor more than 200 mg Lasalocid per head daily to cattle on pasture. 1.34 ounces of this product will supply 60 mg of Lasalocid. 4.44 ounces will provide 200 mg Lasalocid. This product must be contained in at least one pound of supplement.

**CAUTION:** Follow label directions. Consumption of selenium should not exceed 0.3 ppm (and/or 3 mg/head/day) of the diet. 4.44 ounces of this product will supply 3 mg supplemental selenium.

**WARNING:** A withdrawal period has not been established for the product in pre-ruminating cattle. Do not use in calves to be processed for veal.

### CAUTION:

The safety of Lasalocid in unapproved species and breeding animals has not been established. Do not allow horses or other equines access to Lasalocid as ingestion may be fatal. Feeding undiluted or mixing errors resulting in high concentrations of Lasalocid could be fatal to cattle. It must be mixed thoroughly in feeds before use. Do not feed undiluted.

# Feed Analysis



Ag Testing - Consulting

Account No. : 42315

NIR Analysis Report

TRACY, MARK  
 FURST MC NESS COMPANY  
 PO BOX 22  
 FRANKLIN NE 68939-0022

Invoice No. : 1240081  
 Date Received : 07/31/2017  
 Date Reported : 08/01/2017

Lab Number : 5524

Results For : MARTY ULRICH  
 Sample ID :  
 Description : FORAGE

	Analysis As Received	Analysis Dry Basis
Moisture, %	77.87	0.00
Dry Matter, %	22.33	100.00
<b>PROTEIN</b>		
Crude Protein, %	2.8	12.4
<b>FIBERS</b>		
Acid Detergent Fiber, %	7.9	35.5
Neutral Detergent Fiber, %	13.4	60.0
NDFD (digestibility) 48 hr, % of NDF		65
IVTDM (in vitro true digestibility) 48 hr, %	16.0	71.5
<b>ENERGIES</b>		
TDN Est., %	13.9	62.1
Net Energy Lact, MCal/lb	0.1422	0.6367
Net Energy Maint, MCal/lb	0.1399	0.6264
Net Energy Gain, MCal/lb	0.0811	0.3632
<b>QUALITY VALUE</b>		
Relative Feed Value		95
Relative Forage Quality		105
<b>MINERALS</b>		
Calcium, % Ca	0.12	0.54
Phosphorus, % P	0.07	0.31
Potassium, % K	0.37	1.67
Magnesium, % Mg	0.05	0.23
Ash, %	3.59	16.06
<b>OTHER ANALYSIS</b>		
*Nitrate, ppm NO <sub>3</sub> -N		201
*Nitrate, ppm KNO <sub>3</sub>		1453
Safety Level	Safe	
Fat, %	0.2	1.1
Lignin, %	0.00	0.00
Non Fiber Carbohydrates, %	2.5	11.1
Water-Soluble Carbohydrates, %	0.7	3.3

[Click here for Report Interpretation](#)

Reviewed By : Rebecca Kern

8/1/2017

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Page 1 of 2

Bus: 308-234-2418  
 Fax: 308-234-1940

web site  
[www.wardlab.com](http://www.wardlab.com)

4007 Cherry Ave., P.O. Box 788  
 Kearney, Nebraska 68848-0788



# Super Range Mineral

## PURPOSE

A Mineral Supplement for Beef Cattle on Pasture

### \* GUARANTEED ANALYSIS \*

Calcium (Min)	14.3%
Calcium (Max)	17.1%
Phosphorus (Min)	8.0%
Salt (Min)	11.0%
Salt (Max)	13.0%
Magnesium (Min)	1.5%
Sulfur (Min)	.90%
Potassium (Min)	1.0%
Cobalt (Min)	35 ppm
Copper (Min)	2,000 ppm
Iodine (Min)	50 ppm
Iron (Min)	1,500 ppm
Manganese (Min)	2,200 ppm
Selenium (Min)	25 ppm
Zinc (Min)	4,000 ppm
Vitamin A (Min)	100,000 IU
Vitamin D-3 (Min)	10,000 IU
Vitamin E (Min)	100 IU

### \* INGREDIENT STATEMENT \*

Monocalcium Phosphate, Dicalcium Phosphate, Salt, Processed Grain By-products, Calcium Carbonate, Molasses Products, Magnesium Oxide, Potassium Chloride, Zinc Sulfate, Copper Sulfate, Manganese Sulfate, Vitamin A Supplement, Cholecalciferol (D-Activated Animal Sterol - Source of Vitamin D-3), Vitamin E Supplement, Artificial Flavor, Ethylenediamine Dihydriodide, Sodium Selenite, Cobalt Carbonate, Natural and Artificial Flavors.

### \* CAUTION \*

Follow feeding directions at all times. Provide free-choice to cattle on pasture. Consumption will vary depending on quality and quantity of available forage. Normal intake will range between 3 to 4 oz. per head per day. Provide plenty of fresh water and forage at all times.

Product contains added selenium. Intake of supplemental selenium should not exceed 0.3 parts per million on a complete diet basis or a total of 3 milligrams per animal per day.

**WARNING:** This product contains elevated copper levels. Do not feed to sheep or goats as this may result in copper toxicity.

Manufactured by  
**Super Range Mineral Company, Inc.**  
Mineral Maker, TX

Net Wt. 50 lbs.

# SNOHOMISH CO CATTLEMEN'S 10-5

(A SUPPLEMENTAL FEED FOR BEEF CATTLE)

### Guaranteed Analysis

SALT (NaCl)	Not Less Than	34.5 %
SALT (NaCl)	Not More Than	41.4 %
CRUDE PROTEIN	Not Less Than	2.8 %
CRUDE FIBER	Not More Than	2 %
CALCIUM (Ca)	Not Less Than	10.0 %
CALCIUM (Ca)	Not More Than	12.0 %
PHOSPHORUS (P)	Not Less Than	5.0 %
MAGNESIUM (Mg)	Not Less Than	3.0 %
SODIUM (Na)	Not More Than	15.3 %
POTASSIUM (K)	Not Less Than	0.1 %
COPPER (Cu)	Not Less Than	2,144.6 PPM
MANGANESE (Mn)	Not Less Than	3,597.9 PPM
SELENIUM (Se)	Not Less Than	102.9 PPM
SELENIUM (Se)	Not More Than	121.0 PPM
ZINC (Zn)	Not Less Than	6,146.3 PPM
VITAMIN A	Not Less Than	399,891 IU'S/LB
VITAMIN D3	Not Less Than	40,783 IU'S/LB
VITAMIN E	Not Less Than	397 IU'S/LB

### Ingredients

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Manufactured for:  
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411 W. Front St.  
Sumas, WA 98295  
www.elenbaasco.com

**Net Weight 50 LB (22.68 KG)**

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## DRUG CLAIM

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Vitamin E, (Min)	50 IU/Lb.

### INGREDIENT STATEMENT:

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### FEEDING DIRECTIONS:

Thoroughly mix VMS BEEF BUILDER W/BOVATEC<sup>®</sup> MEDICATED mineral with non-medicated feeds as grain and/or roughage to provide 30-400 g/ton Bovatec<sup>®</sup> in the pasture supplement. Feed continuously to provide not less than 60 mg nor more than 200 mg Lasalocid per head daily to cattle on pasture. 1.34 ounces of this product will supply 60 mg of Lasalocid; 4.44 ounces will provide 200 mg Lasalocid. This product must be contained in at least one pound of supplement.

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## Components of a Mineral Tag

- Name
- Drug Claim
- Active Ingredient
- Guaranteed Analysis
- Ingredients
- Feeding Directions
- Caution Statements
  - Warnings and Withdrawals



Account No. : 42315

NIR Analysis Report

TRACY, MARK  
FURST MC NESS COMPANY  
PO BOX 22  
FRANKLIN NE 68939-0022

Invoice No. : 1240081  
Date Received : 07/31/2017  
Date Reported : 08/01/2017

Lab Number : 5524

Results For : MARTY ULRICH

Sample ID :

Description : FORAGE

	Analysis As Received	Analysis Dry Basis
Moisture, %	77.87	0.00
Dry Matter, %	22.33	100.00
<b>PROTEIN</b>		
Crude Protein, %	2.8	12.4
<b>FIBERS</b>		
Acid Detergent Fiber, %	7.9	35.5
Neutral Detergent Fiber, %	13.4	60.0
NDFD (digestibility) 48 hr, % of NDF		65
IVTDM (in vitro true digestibility) 48 hr, %	16.0	71.5
<b>ENERGIES</b>		
TDN Est., %	13.9	62.1
Net Energy Lact, MCal/lb	0.1422	0.6387
Net Energy Maint, MCal/lb	0.1399	0.6264
Net Energy Gain, MCal/lb	0.0811	0.3632
<b>QUALITY VALUE</b>		
Relative Feed Value		95
Relative Forage Quality		105
<b>MINERALS</b>		
Calcium, % Ca	0.12	0.54
Phosphorus, % P	0.07	0.31
Potassium, % K	0.37	1.67
Magnesium, % Mg	0.05	0.23
Ash, %	3.59	16.06
<b>OTHER ANALYSIS</b>		
*Nitrate, ppm NO <sub>3</sub> -N		201
*Nitrate, ppm KNO <sub>3</sub>		1453
Safety Level	Safe	
Fat, %	0.2	1.1
Lignin, %	0.00	0.00
Non Fiber Carbohydrates, %	2.5	11.1
Water-Soluble Carbohydrates, %	0.7	3.3

[Click here for Report Interpretation](#)

Reviewed By : Rebecca Kern

8/1/2017

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Fax: 308-234-1940

web site  
www.wardlab.com

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Kearney, Nebraska 68848-0788