

# EQUINE EDGE



## TRACE MINERALIZED SALT BLOCKS

HORSES NEED MORE THAN A TRACE OF MINERALS

Many people provide horses with a trace mineralized salt block, assuming this will provide all the minerals a horse needs. Unfortunately for the horse, when this occurs, mineral needs may not be satisfied. Typically, trace mineralized salt provides only a fraction of a horse's trace mineral needs and does not provide the macro-mineral (except sodium and chlorine) and vitamin needs. Most trace mineralized salt blocks contain 95% or more salt and contain only a "trace" of minerals.

Minerals are inorganic elements that are needed by all animals to remain healthy. Some minerals are essential components of vitamins, hormones, and amino acids. Minerals that are required in larger amounts, usually as a certain percentage of the horse's diet, are referred to as macro-minerals. Minerals required in very small amounts are called micro or trace minerals. A horse receives some of its mineral needs from hay and grain.

Table 1 shows the percentage of a horse's mineral needs that are met by consuming the recommended amount of a typical trace mineralized salt block containing selenium. (Many trace mineralized salt blocks do not contain selenium.) It is evident that the typical trace mineralized salt block only provides a small portion of the horse's trace mineral needs and does not provide any calcium, phosphorus, magnesium, potassium, or vitamins. To remain healthy, a horse requires macro-minerals and vitamins as well as adequate amounts of trace minerals. The following discussion briefly covers various minerals and problems associated with a deficiency of a given mineral.

### MACRO-MINERALS

**Ca & P**—Adequate calcium and phosphorus are needed by the horse for healthy teeth and bones and for other metabolic processes. The ratio of calcium to phosphorus is also important. The ratio should be between 1.5:1 and 2:1. Excessive dietary phosphorus occurs more often than excessive calcium. A calcium deficiency can cause rickets in growing foals and osteomalacia (fragile, brittle bones). A phosphorus

deficiency can also cause rickets and fragile bones, and can lead to fractures and lameness.

Most phosphorus deficient animals will develop pica (a depraved appetite) and begin to eat dirt, rocks, and wood. A less severe phosphorus deficiency can result in a listless horse with a dull, dry hair coat. An imbalance in the calcium to phosphorus ratio in which there is too much phosphorus, can cause osteodystrophy, a condition in which bones become very weak and the tendons may detach from the bones. One of the first signs of a calcium or phosphorus deficiency in an adult horse may be intermittent shifting lameness.

**Mg**—Magnesium is also found in bones, but it is primarily needed for muscles and nervous tissue function. A magnesium deficiency can result in nervousness and muscle tremors and, in severe cases, lead to collapse, convulsions, and death. Magnesium-

deficient horses tend to be very excitable and spook easily.

**K**—Potassium is an important electrolyte in the horse's body cells and is needed to maintain the cells' acid/base balance and internal cellular fluid pressure. Forages usually provide enough potassium for horses

TABLE ONE

**Percentage of a 1200 lb Horse's Maintenance Mineral Requirements Provided by a Typical Trace Mineral Salt Block Containing Selenium Consumed at the Recommended Rate<sup>†</sup>**

	<i>Percentage of Maintenance Mineral Requirement</i>
Calcium	0
Phosphorus	0
Magnesium	0
Potassium	0
Sodium	73.5
Copper	3.7
Iron	9.4
Iodine	78
Manganese	5.5
Selenium	100
Zinc	9.7
Cobalt	55.5

<sup>†</sup> Mineral requirements based on the National Research Council, *Nutrient Requirements of Horses*, 1989.

when fed at 1% of body weight or more. The major symptom of a potassium deficiency is reduced appetite and weight loss. In hot weather and/or when working hard, a horse's potassium requirement can increase significantly as potassium is excreted in the horse's sweat. Horses with the genetic disorder HYPP must be fed limited amounts of potassium (refer to Equine Technical Edge "Equine Hyperkalemic Periodic Paralysis [HYPP] Overview & Management Strategies").

**Na & Cl**—Sodium is the major blood electrolyte and is needed for the regulation of body fluids. Chlorine is also needed for fluid regulation and is an important component of gastric acids and bile. A chronic sodium and/or chlorine deficiency can lead to decreased appetite and water intake, dehydration, and a tendency to lick objects, such as sweaty tack items or tools.

### TRACE MINERALS

**Cu**—Copper is required for healthy connective tissue and proper iron utilization. A deficiency of copper can lead to anemia and bone and joint problems. Copper-deficient horses sometimes have dull, discolored hair coats. The coat of black horses may take on a reddish tinge.

**Co**—Cobalt is required for vitamin B<sub>12</sub> synthesis. A deficiency of cobalt would be evidenced by a vitamin B<sub>12</sub> deficiency. However, a B<sub>12</sub> deficiency, which can cause anemia, is very rare in horses.

**I**—Iodine is a required component of thyroid hormones, which regulate metabolism and growth. Foals born to iodine-deficient dams may be stillborn or born weak and unable to suckle. Iodine-deficient mares may not cycle regularly. One of the symptoms of an iodine deficiency is goiter (an enlarged thyroid gland), which shows up as a swelling of the throat at the throat latch. Soils and feedstuffs grown in the upper Midwest are especially low in iodine.

**Fe**—Iron functions primarily as a component of blood hemoglobin. The most obvious sign of iron deficiency is anemia. Anemic horses are weak and listless and unable to perform up to their potential.

**Mn**—Manganese is needed for cartilage development and for the proper utilization of other trace minerals. A manganese deficiency can cause cartilage and bone deformities in growing foals.

**Se**—Selenium is an antioxidant. Selenium deficiencies can lead to white muscle disease in foals and reduced reproductive performance in adult animals. A selenium-deficient horse may have gait abnormalities and frequently stumble and even fall while running. Selenium and vitamin E have similar functions in the body. Without blood tests it is often difficult to tell the difference between a selenium deficiency and a vitamin E deficiency.

**Zn**—Zinc is needed for healthy skin, bone, hoof, and connective tissue and for reproduction. Zinc deficiencies may cause reduced appetite and growth in foals and poor hoof and skin growth and reproductive problems. Brittle, crumbly hooves can be a sign of a zinc deficiency as can dry, flaking skin, and dull hair coats.

### CONCLUSION

Proper mineral nutrition is very important to a horse's health. Although, hay and grain contain some of the minerals required by the horse, many regions have low levels of some minerals in the soil; consequently, the feedstuffs grown there will be low in those elements. Therefore, providing proper mineral supplementation is essential to a horse's health. And, proper mineral supplementation requires more than just a trace mineralized salt block. To ensure a horse's health and well-being, it is important to provide a well-balanced mineral supplement formulated specifically for horses. The supplement should contain macro and trace minerals along with vitamins. □

For assistance in developing an equine nutritional program, call 1-800-680-8254.  
Our equine specialists will assist you in developing programs specifically for your horses.



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1000 N 30th St, PO Box C1, Quincy, IL 62305-3115  
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