



SOLSEEL®

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Always close to customers

All **esco** services are closely geared to special customer requirements. Constant innovation too is not an end in itself, but is primarily intended to improve production technology, a given service or a particular product. That is precisely what practicing proximity to the customers is all about.

Our **SOLSEL®** products are certified according to the necessary quality assurance systems.



SOLSEL® Crystal Salt Lickstones

Health + performance via self-service

Modern animal and livestock husbandry requires optimum feeding! Healthy and high performance animals give you the competitive edge in sports and masting, for milk output and in other uses.

Lickstones as a simple and cost-saving feed supplement

Lickstones play an important role in animal feeding as simple and cost-saving supplements. They deliver the vital sodium chloride as well as other elements which are essential and improve performance such as magnesium, calcium, cobalt, iodine, selenium or copper.

Efficiency through instinctive consumption!

The individual salt requirements of each animal is a complex calculation – depending on species, age, use and demanded output. This problem is resolved by the animal in an amazingly instinctive and efficient way: It licks until it has satisfied its requirements, thus preventing over-dosage and addictions. This natural method of supplying itself the essential sodium chloride is at the same time the ideal way to provide the animal with other minerals.

Prevention of nutritional deficiencies with SOLSEL® Lickstones

A nutritional deficiency is hardly ever noticed until the consequences are clearly visible. A lack of appetite for example is quite often caused by an insufficient supply of sodium, the interruption of neural communication can be based on a deficiency of magnesium. **SOLSEL® Lickstones** prevent both these and other deficiencies – either in the form of a salt lickstone or as a mineral lickstone with a harmonized mix of oligo- and trace elements.

Quality through natural raw materials and modern science

Leading experts in animal nutrition have helped compose the premixes for the mineral lickstones. The salt-share of these stones stems from the highly pure mid-European sea salt deposits that have evolved from the sunshine-induced evaporation of the former semi-enclosed seas more than 200 million years ago. All **SOLSEL® Lickstones** may be used in organic production in accordance with regulation (EEC) No. 2092/91, excluding **SOLSEL Mineral-Lickstone plus**.

SOLSEL®



Pure Salt Lickstone

Sodium is vital. It not only stabilizes the pressure within and outside the body cells but is also indispensable for the function of the nerve cells. Moreover, it regulates the water balance of the animal and stimulates its appetite. The chloride-supply is also important for keeping your animals healthy.

Most basic feeds do not contain sufficient sodium; therefore SOLSEL® Salt Lickstones offer an economic and adequate feeding supplement.

SOLSEL® Salt Lickstones are produced in a special compacting procedure. The stability of the stones is the result of years of tests and optimization processes. This guarantees high weather-resistance as well as a consistent regular consumption by the animal.

SOLSEL® Salt Lickstones are suitable for all species. However, the size of the stones is specially designed for cattle, horses, sheep, goats and wild animals/game.

Composition:
sodium chloride, sodium content 39%

Delivery units are euro pallets or half-sized pallets (so-called "Düsseldorfer") with 25 kg, 10 kg or 5 kg blocks



Mineral-Lickstone extra ^{1/3}

High performance means: High mineral consumption. The economic significance of your animals thus demands a reliable and sufficient mineral supply.

Together with animal nutritionists and considering the economic aspects of livestock husbandry **esco** has developed a special lickstone that guarantees sufficient supply of the vital trace elements zinc, manganese, iron, iodine, cobalt, copper and selenium. **The SOLSEL® Mineral-Lickstone extra supports the basic feeding by contributing one third of the requirements of the above-mentioned vital minerals.** Shortfalls in the supply of these elements – often unseen or not identified at first – are then highly unlikely. However, the recommended maximum consumption will be satisfied reliably by using this special lickstone as a feed supplement.

SOLSEL® Mineral-Lickstones extra are especially suited for animals with high economic significance and an increased mineral demand, due to either high performance or very low quantities of minerals in their surroundings. The size of the 10 kg stones is primarily adequate for cattle and horses.

Composition:
sodium chloride, calcium-magnesium-carbonate, trace elements

Contents:
sodium 37%, calcium 1,2%,
magnesium 0,7%, zinc from zinc oxide 8250 mg/kg, manganese from manganese-(II)-oxide 6600 mg/kg, copper from copper-(II)-oxide 1650 mg/kg, iron from iron-(III)-oxide 700 mg/kg, iodine from calciumiodate 100 mg/kg, cobalt from cobalt-(II)-carbonate 25 mg/kg, selenium from sodiumselenite 25 mg/kg

Delivery units are euro pallets or half-sized pallets (so-called "Düsseldorfer") with 10 kg blocks



Mineral-Lickstone with copper

Besides sodium chloride all animals need a variety of other minerals. Vitally important trace elements are zinc, manganese, magnesium, calcium, iodine, selenium and cobalt. Each of these elements are responsible for different tasks in the organism of the animal. Magnesium, for example, is responsible for proper muscle contraction as well as for the faultless function of the nerves.

The individual mineral requirements of each animal can vary significantly – even within homogeneous groups. SOLSEL® Mineral-Lickstones – **along with basic feeds – guarantee a farreaching compensation of mineral-losses through spontaneous licking of the salt stones which contain the trace elements.**

SOLSEL® Mineral-Lickstones are suitable for all species. However, the size of the 5 kg- and 10 kg-stones is specially designed for cattle, horses, goats and wild animals/game. For sheep we recommend the SOLSEL® Mineral-Lickstones without copper.

Composition:

sodium chloride, calcium-magnesium-carbonate, trace elements

Contents:

sodium 37%, calcium 1,6%,
magnesium 0,6%, manganese from manganese-(II)-oxide 1000 mg/kg,
zinc from zincoxide 1000 mg/kg,
copper from copper-(II)-sulfate 220 mg/kg,
iodine from calciumiodate 100 mg/kg,
cobalt from cobalt-(II)-carbonate 20 mg/kg,
selenium from sodiumselenite 20 mg/kg

Delivery units are euro pallets or halvesized pallets (so-called "Düsseldorfer") with 25 kg, 10 kg or 5 kg blocks



Mineral-Lickstone without copper

Besides pure salt all animals need a variety of other minerals. Vitally important trace elements are zinc, manganese, magnesium, calcium, iodine, selenium and cobalt. Each of these elements is responsible for different tasks in the organism of the animal. Magnesium, for example, is responsible for proper muscle contraction as well as for the faultless function of the nerves.

SOLSEL® Mineral-Lickstones without copper have been designed specially for feeding sheep. However, they are of course harmless and also well suited for feeding cattle, horses, goats and pigs.

The individual mineral requirements of each animal can vary significantly – even within homogeneous groups. SOLSEL® Mineral-Lickstones without copper guarantee a farreaching compensation of mineral-losses through spontaneous licking of the salt stone which contains trace elements. **In order to avoid any health risks with sheep the formulation of this specially designed lickstone does not include copper.**

Composition:

sodium chloride, calcium-magnesium-carbonate, trace elements

Contents:

sodium 37%, calcium 1,1%,
magnesium 0,6%, manganese from manganese-(II)-oxide 1000 mg/kg,
zinc from zincoxide 1000 mg/kg,
iron from iron-(III)-oxide 300 mg/kg,
iodine from calciumiodate 100 mg/kg,
cobalt from cobalt-(II)-carbonate 20 mg/kg,
selenium from sodiumselenite 20 mg/kg

Delivery units are euro pallets or halvesized pallets (so-called "Düsseldorfer") with 25 kg, 10 kg or 5 kg blocks



Mineral-Lickstone plus

Minerals for horses and other livestock

Our goal is to preventively combat lack of nutrients.

A lack of nutrients is always recognized once the consequences are already visible. SOLSEL® Mineral-Lickstone plus prevents those deficiencies.

Besides salt (Sodium), each animal needs a number of additional minerals and trace elements. Our SOLSEL® Mineral-Lickstone plus was developed for this on the basis of scientific investigations. The formulation was selected in such a way that optimal achievements and a resistant physical condition are ensured.

- **Sodium** is vital for regulating your horse's water balance and acid-base balance.
- **Magnesium** is responsible for proper muscle contraction as well as for the faultless function of the nerves

- **Phosphorus** and **Calcium** promote the development of the bone structure and is ideal for livestock breeding and offsprings.
- **Copper** is indispensable for strengthening bone and cartilage. It helps to prevent deviations in limb position (angular limb deformities, contracted flexor tendons.)
- **Zinc** ensures a robust immune system, healthy skin, a smooth, gleaming coat and strong hooves.
- **Iron** is important for the oxygen and CO₂ transport in the blood vessels as well as oxygen transport in the muscle
- **Manganese** is important for fertility and skeletal development.
- **Selenium** promotes healthy muscle metabolism.
- For a good acceptance and as additional sources of energy, molasses is attached.
- Also further vitally necessary trace elements, like **cobalt** and **iodine**, are likewise contained in SOLSEL® Mineral-Lickstone plus

Composition:

sodium chloride, calcium-magnesium carbonate, dicalcium phosphate, molasse (traditional cultivation), trace elements

Contents:

sodium 19% Calcium 13%, phosphorus 5%, magnesium 3%, molasses 0,7%, zinc from zinc oxide 3000 mg/kg, iron from iron (II) carbonate 1500mg/kg, copper from copper oxide 1000mg/kg, manganese from manganese (II) oxide 200mg/kg, iodate from calcium iodate 10 mg/kg, cobalt from cobalt (II) carbonate 10mg/kg, selenium from sodiumselenite 10mg/kg.

Delivery units are euro pallets with 5 kg blocks



Lickstone-Holder

Appropriate and durable construction from plastic, suitably for our SOLSEL® Lickstones 5 kg and 10 kg.



The significance of selected minerals¹⁾:

No animal can live without minerals. The significance of this has only been recognized by modern science for around 100 years. Since this time, scientists and nutritionists have been trying to supplement the daily natural feed for domestic and wild animals in a way that guarantees optimum performance and robust health. It is very difficult to determine the exact mineral requirements of an individual animal, due to various basic feeds and concentrated feedstuffs, required performance but also the respective individual inclination. However, considerable research has been conducted on numerous principle effects of single elements on the organism of the animal.

Oligo elements (> 50mg/kg of body weight of the animal)

Sodium stabilizes the osmotic pressure in the body fluids, it regulates the water-balance and plays a major role for the impulse transmission in the nerve tissue and the arousal of the muscle fibres.

Deficiency symptoms: loss of appetite, reduced performance, loss of weight, licking addition, drop in quantity of milk, fertility dysfunctions

Magnesium is important for the function of muscles and for bone structure. Moreover, it activates enzymes vital to the physical energy metabolism.

Deficiency symptoms: hypomagnesia (pasture disease), reduced feed-intake, cramps, stress

Calcium plays a major role in neural transmissions and is a significant component of the bone structure. It also plays an important role in forming milk and is a valuable component of the milk.

Deficiency symptoms: Malfunctions in the development of bones and also in the metabolism processes

Trace elements (< 50mg/kg of body weight of the animal)

Manganese is necessary for the protein and fat synthesis of the organism of the animal. It activates numerous enzymes involved in metabolism processes. There is especially a risk of deficiency with cows and calves. Moreover, low reserves of this element are to be taken into account with all young animals.

Deficiency symptoms: considerable disorders of fertility, reduced growth, disorder of the central nervous system and abnormal development of the skeleton.

Zinc is involved in the metabolism of the proteins, carbohydrates and fats and neural transmission. It stabilizes cell membranes and is additionally a part of the hormone insulin.

Deficiency symptoms: Hair loss, delay in wound healing, reduced food-intake, malfunctions in fertility, disorder of the protein synthesis.

Cobalt is a component of the vitamin B12 and involved in the activation of enzymes. Cobalt is also necessary for the absorption of iron.

Deficiency symptoms: fatty liver, anaemia, reduction in the vitamin B12 content in the blood, immunodeficiency, death not excluded

Iodine is indispensable for forming the thyroid hormone. Therefore, iodine is involved in oxidative processes in all cells and has a positive influence on the energy balance.

Deficiency symptoms: goitre formation, malfunctions of fertility, reduced performance in general (fatigue, fat), reduced milk production

Copper is a component of various proteins and enzymes and also responsible for numerous metabolism processes in the organism of the animal. Attention is to be paid to the fact when feeding that sheep can only discharge a limited amount of copper via the gall bladder.

Deficiency symptoms: Licking-addiction, diarrhoea, disorder of the central nervous system, premature death of embryos and miscarriages, reduced milk and milk fat performance

Selenium is very important for the protein synthesis and for body-own processes for detoxication and metabolism. As so-called "radical catcher" Selenium is indispensable for the organism of the animals.

Deficiency symptoms: Reduction in growth, weak newborns, immuno-deficiency, jaundice especially with piglets and foals, damages to the muscular system, illnesses from a deficiency of selenium are as a rule very serious with young animals.

Iron is important for the transport of oxygen and CO₂ in the blood and the transport of oxygen in the muscles of the animal. Iron is also antibacterial as a component of the milk. Attention is to be paid to a comparably high requirement with young mammals, in particular with piglets.

Deficiency symptoms: anaemia, lack of growth, reduced resistance to illnesses, loss of appetite.

SOLSEL® Crystal Salt Lickstones

Health + performance via self-service

Our Formulation:

		Pure Salt Lickstone 5kg/10kg	Mineral-Lickstone <u>without</u> copper 5kg/10kg	Mineral-Lickstone <u>with</u> copper 5kg/10kg	Mineral-Lickstone <u>extra</u> 10kg	Mineral-Lickstone <u>plus</u> 5kg
Natrium	Na	39%	37%	37%	37%	19%
Calcium	Ca	---	1,1%	1,6%	1,2%	13%
Phosphorus	P	---	---	---	---	5%
Magnesium	Mg	---	0,6%	0,6%	0,7%	3%
Zinc	Zn	---	1000 mg/kg	1000 mg/kg	8250 mg/kg	3000 mg/kg
Manganese	Mn	---	1000 mg/kg	1000 mg/kg	6600 mg/kg	200 mg/kg
Copper	Cu	---	---	220 mg/kg	1650 mg/kg	1000mg/kg
Iron	Fe	---	300 mg/kg	---	700 mg/kg	1500 mg/kg
Cobalt	Co	---	20 mg/kg	20 mg/kg	25 mg/kg	10 mg/kg
Iodine	I	---	100 mg/kg	100 mg/kg	100 mg/kg	10 mg/kg
Selenium	Se	---	20 mg/kg	20 mg/kg	25 mg/kg	10 mg/kg



¹⁾ see Jeroch among others, in: "Ernährung landwirtschaftlicher Nutztiere: Ernährungsphysiologie, Futtermittelkunde, Fütterung" ("Nutrition of agricultural working animals: Nutritional physiology, science of feedstuffs, feeding"), - Stuttgart: Ulmer, 1999 (UTB für Wissenschaft: Große Reihe)