

NEW

## VITAMIN & MINERAL PACK



### Technical Guide



ED&F Man have designed a tailored package, delivering a carefully formulated balance of vitamins and minerals. This is based on typical UK grass and silage levels, so as not to over supply or under supply the requirements of livestock. The package delivers the necessary vitamins and trace minerals that are essential to livestock health and performance. It is advised that when using this package on farm, that no other form of trace element supplementation is used in combination.

#### Vitamins

Vitamins can be split into two groups: fat soluble and water soluble. Water soluble vitamins and vitamin K can be synthesised in the rumen, meaning that ruminants have a dietary requirement for vitamins A, D and E.

##### Fat Soluble:

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K

##### Water Soluble:

- B-Vitamins
- Vitamin C
- Choline
- Biotin

**Vitamin A** is crucial for skin and coat health, vision and the synthesis of reproductive hormones. Low levels of this vitamin can lead to higher incidences of retained placentas and poor conception rates.

**Vitamin D** ensures optimum absorption of calcium and phosphorus which is critical for a dairy cow. Low levels can reduce feed intake and lead to rickets in calves.



**Vitamin E** is an antioxidant and protects cells against damage, which helps in the prevention of numerous diseases. Low levels of vitamin E results in white muscle disease, as well as reduced fertility and an impaired immune response making it very important for calf health.

#### Minerals

Mineral requirements can be split into two groups: major and trace. Major minerals need to be supplemented at a very high level, whereas trace minerals are required in very small quantities of milligrams per day. However, their functions within the ruminant are vital.

**Zinc** is a component of over 100 enzymes in the body and therefore is a crucial mineral required by livestock. It is mainly found in the skin, wool, hair and horn. It helps with wound healing, growth and sexual development. Deficiencies of zinc can result in hair loss, lesions around the legs, neck and head, infertility and an impaired immune system.

**Cobalt** functions as a component of vitamin B12. Without cobalt the ruminant cannot synthesis B12. Cobalt deficiency results in a poor appetite, reduced growth and poor hair quality.

**Selenium** works in conjunction with vitamin E to protect cells against oxidation. Selenium is necessary for healthy skin, muscles and heart function. It also supports the formation of antibodies, which can help boost the immune system. A deficiency will result in white muscle disease, infertility and retained placentas.

**Manganese** is essential for the normal functioning of enzyme systems within the body. It is used in bone formation and muscle coordination, with low levels resulting in delayed or irregular oestrus, joint and bone abnormalities and poor conception rates.

**Iodine** is necessary to form thyroid hormones, which regulate the body's metabolic rate. Iodine promotes normal cell function, growth and development. Iodine deficiency results in goitre, hairless calves and impaired reproduction.

**Copper** is found in the bones, muscle, heart, liver and kidneys. It is involved in the absorption and metabolism of iron, muscle growth and fertility. Copper deficiency causes the coat to show a brown discolouration as well as poor growth rates, infertility and weak calves at birth.

Inclusion	(IU/kg)
Vitamin A	42000
Vitamin D3	8000
Vitamin E	150

Mineral	(mg/kg)
Cobalt	3
Iodine	20
Manganese	400
Zinc	400
Selenium	2.5
Copper (Cattle Mix <b>ONLY</b> )	120

#### Background

Depending on the origin of the molasses the background level of macro and trace minerals can be variable. The table below highlights the typical levels that can be found.

MACRO	Range (%)
Sodium	0.1 – 0.4
Potassium	0.75 – 2.50
Calcium	0.4 – 0.8
Chlorine	0.7 – 3.0
Phosphorus	0.03 – 0.1
Sulphur	0.2 – 0.8
Magnesium	0.05 – 0.98

TRACE	Range (mg/kg)
Copper	2.2 – 38
Iron	30 – 500
Zinc	4.0 – 48
Cobalt	0.3 – 2.0
Cadmium	0.4
Manganese	4 – 300
Aluminium	0.01 – 0.02

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