

IntelliBond®

A revolution in trace mineral nutrition



The IntelliBond story

Hydroxy trace mineral technology was first introduced to the market by Micronutrients, Indianapolis, in the mid 1990s following a research project to develop a mineral source with optimised bioavailability and stability.

Further research soon revealed that these hydroxy trace minerals employed specific bonds that were strong enough to remain intact in animal feed and the upper gastrointestinal tract whilst remaining ideal for absorption in the lower gut of the animal. Hence in 2011, the IntelliBond family of hydroxy trace minerals was born.

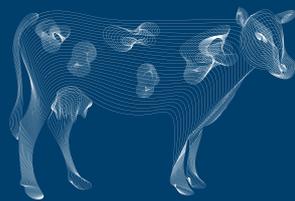
In 2016, Micronutrients was acquired by Nutreco to strengthen the Trouw Nutrition Selko[®] feed additive brand portfolio which adds value to integrators, feed mills and farmers.

Selko IntelliBond is now the fastest growing hydroxy trace mineral brand in the world, produced to one of the most robust quality control and assurance programmes in the industry. It offers a unique and technologically advanced solution to help drive superior animal performance whilst also delivering environmental benefits.

Fulfilling requirements from the feed mill through to farm



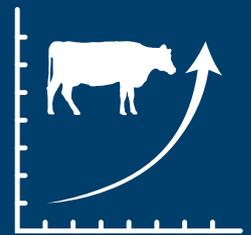
Feed Mill



Rumen Function



Bioavailability



Animal Performance



Unique, technologically advanced **trace minerals**

Hydroxy trace minerals are a newly defined category of trace minerals, which have a unique hydroxy group covalently bonded to the metal. This creates a category of trace minerals with high bioavailability and low reactivity, delivering optimal efficacy.

A uniquely defined crystalline structure combined with a complex network of strong integral covalent bonds is what we believe gives IntelliBond trace minerals their superior and unique properties, benefitting feed mill manufacture, animal performance and the environment. In addition, IntelliBond has been developed with patented OptiSize™ Large Particle Technology to give improved handling, precision and uniformity in feed.



The IntelliBond range

Proven through extensive research evaluations conducted at respected universities and research institutes.

INTELLIBOND C Dicopper chloride trihydroxide



An effective source of **copper** to support joint health, red blood cell function, immunity, fertility and energy metabolism.

INTELLIBOND Z Zinc hydroxychloride



An effective source of **zinc** to support skin, hair and hoof integrity, immunity and healthy bone and cartilage formation.

INTELLIBOND M Manganese hydroxychloride



An effective source of **manganese** to support robust bone formation, immunity and nervous function.



Optimal mixing uniformity, handling and **stability** in feed

The specific bonds and patented OptiSize Large Particle Technology employed within IntelliBond hydroxy trace minerals help to ensure a product with superior characteristics favourable during feed manufacture, meaning there is no detrimental effect on premix or finished feed quality and stability.

OptiSize Large Particle Technology helps to ensure all IntelliBond hydroxy trace minerals have a uniform particle size for more predictable measuring and handling whilst helping to ensure the product blends easily throughout feed and avoids segregation. Additionally, the non-hygroscopic nature of the mineral particles ensure moisture from the atmosphere is not absorbed which may otherwise cause the product to cake or clump.

During feed manufacture, the addition of moisture in the form of steam or water may cause negative interactions within the feed which may render other nutrients no longer available to the animal. The superior stability and non-reactive nature of IntelliBond ensures the product remains inert during feed manufacture, avoiding any undesirable reactions.

These superior characteristics of IntelliBond have been demonstrated in a study which assessed loss of vitamin E in feed. Over a storage period of 40 days, the level of vitamin E in feed when IntelliBond C was added to the diet remained comparable to the control diet, whereas significant loss of vitamin E occurred when an equivalent level of inorganic copper sulphate was added (Figure 1).

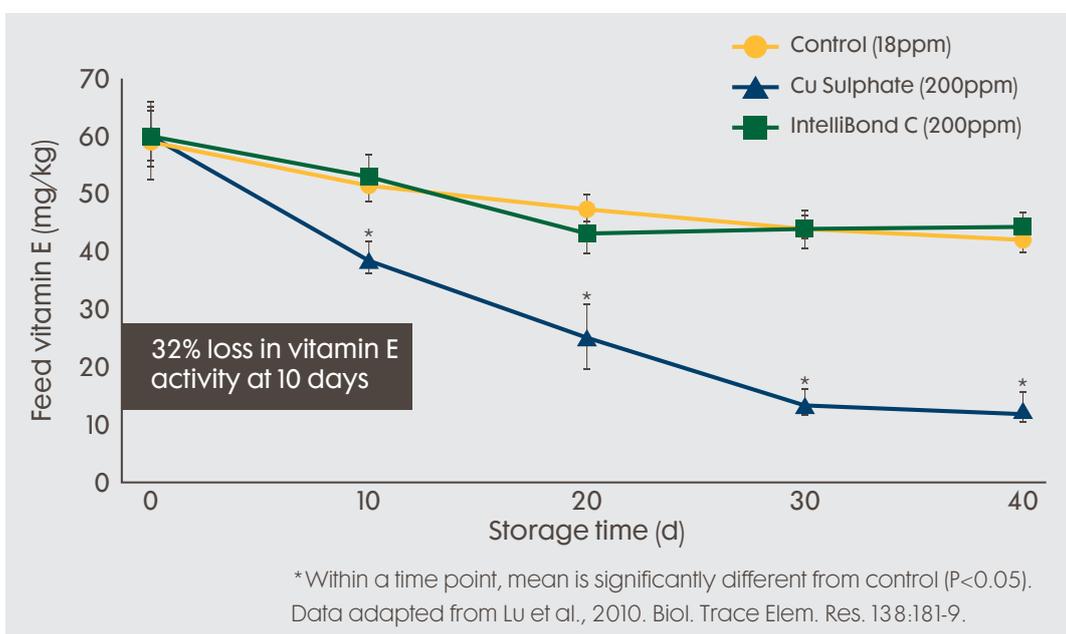
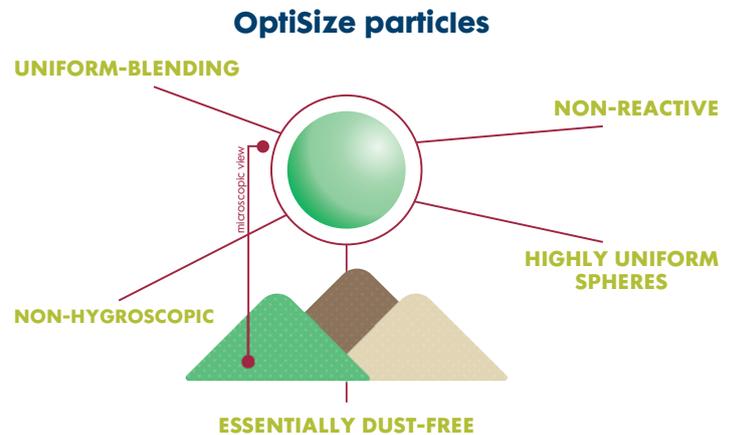
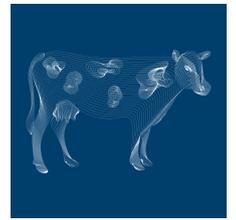


Figure 1: Vitamin E loss in feed following the addition of inorganic copper sulphate versus IntelliBond C in comparison to no additional copper.



Limited rumen reactivity

Unlike inorganic sulphate trace minerals, IntelliBond hydroxy trace minerals remain stable in the rumen avoiding negative reactions with rumen microbes and antagonists. This helps to ensure that the functions of beneficial fibre-digesting bacteria within the rumen are not compromised, allowing optimal fibre digestion and subsequent animal performance.

Research has shown replacing sulphate trace minerals with IntelliBond hydroxy trace minerals to avoid a reduction in neutral detergent fibre digestibility (NDFd) by up to 3.4 points in dairy and beef cattle diets (Figure 2).

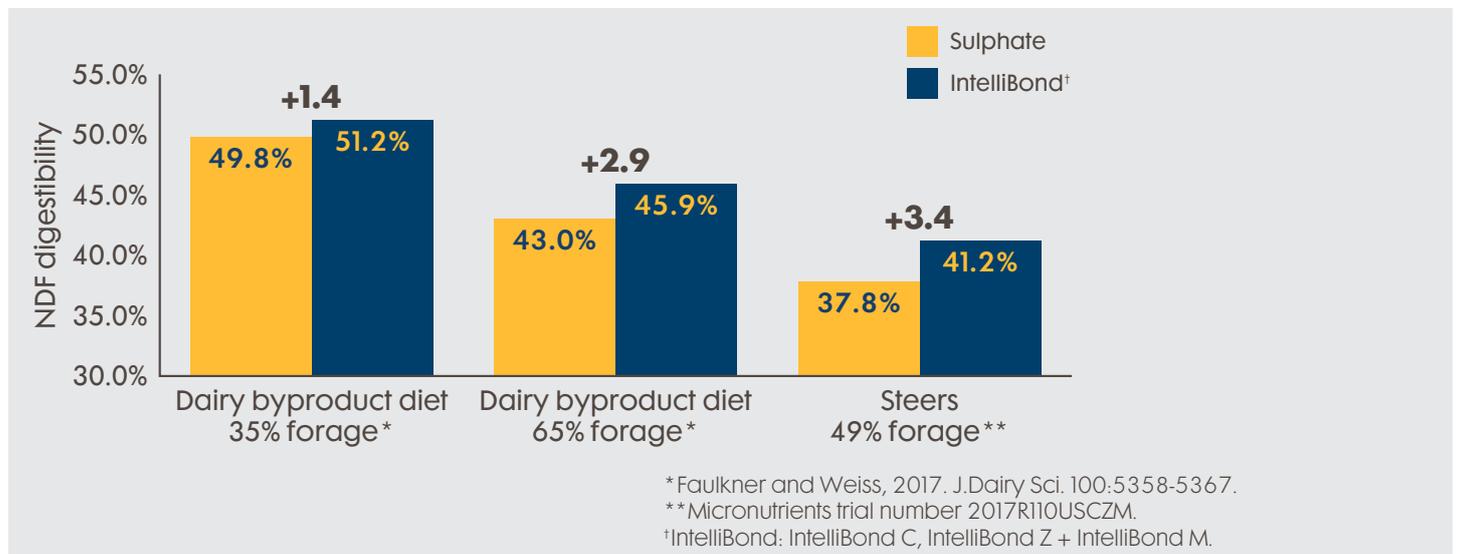


Figure 2: NDF digestibility within diets containing either inorganic sulphate trace minerals or IntelliBond hydroxy trace minerals.

So how does this translate into better animal production?

Michigan State University research indicates that:

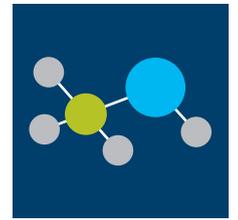


1 point of NDFd = 0.25 to 0.3kgs of milk

2.9 points x 0.25kg = 0.73kg milk / cow / day



Reference: Oba and Allen, 1999. J. Dairy Sci. 82: 589-596.



Delivering more to the bloodstream

Supplementing animals with a trace mineral source that has high relative bioavailability (RBV) is not only important for maximising animal performance but also in minimising the environmental impact of mineral excretion.

Independent university research has shown IntelliBond C and IntelliBond Z to have 1.96 and 2.04 times greater RBV when compared to inorganic sources of copper and zinc respectively. It has been suggested that the low rumen solubility of IntelliBond hydroxy trace minerals may reduce interactions with antagonists and the formation of insoluble complexes in the rumen, therefore increasing mineral absorption and reducing wastage into the environment (Figure 3).

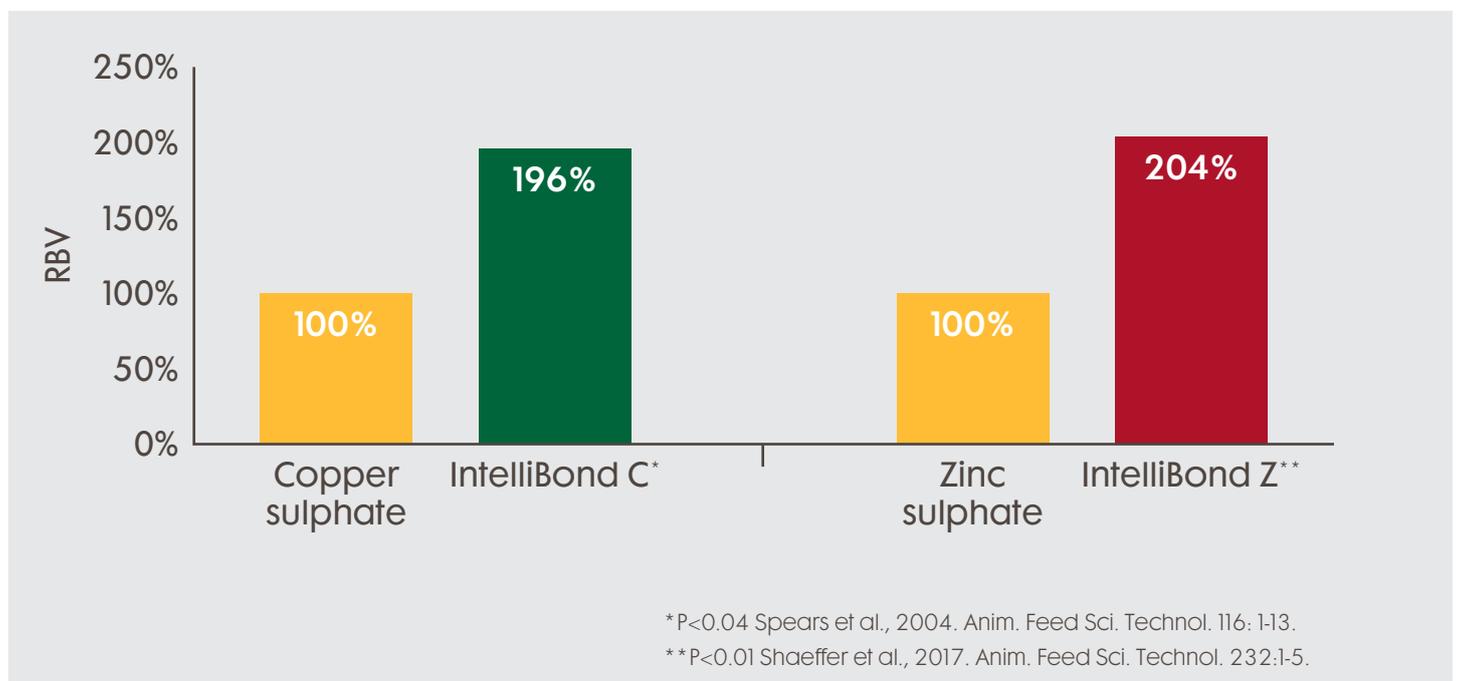
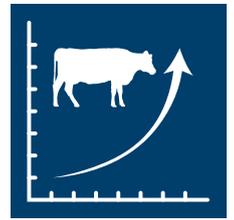


Figure 3: Relative bioavailability of IntelliBond C and IntelliBond Z in cattle in comparison to inorganic copper sulphate and zinc sulphate respectively.



Healthier, more productive animals

The unique properties of IntelliBond hydroxy trace minerals help provide a reliable and predictable supply of trace minerals to the animal, to drive optimal health and productivity within all ruminant species.

Research at Cornell University has shown supplementation with IntelliBond to modulate markers of oxidative status and haptoglobin in transition dairy cows. In the same study, milk yield of early lactation cows was also significantly increased in week five when supplemented with IntelliBond hydroxy trace minerals (Figure 4).

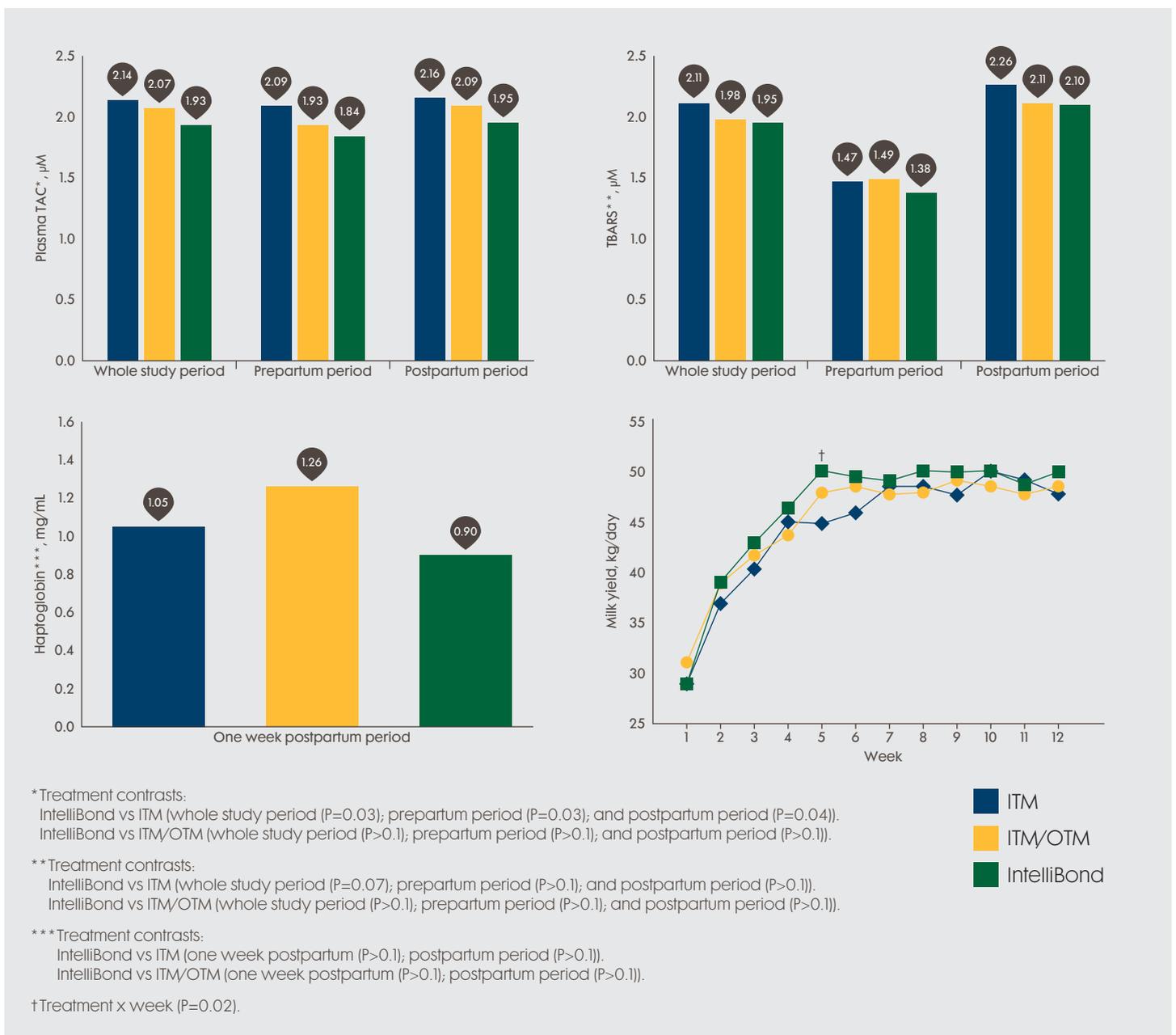


Figure 4: Plasma total antioxidant capacity (TAC), thiobarbituric acid-reactive substances (TBARS), haptoglobin and milk yield in transition cows supplemented with either inorganic trace minerals only, inorganic and organic trace minerals, or IntelliBond hydroxy trace minerals.



For more information
trouwnutrition.co.uk/intellibond

IntelliBond portfolio

Our numerous food safety and quality certifications mean suppliers and farmers from around the world can be confident when they turn to IntelliBond trace minerals.



Selko® and IntelliBond® are brands of Trouw Nutrition, a Nutreco company.

Trouw Nutrition is a global leader in innovative feed specialities, premixes and technical services for animal nutrition. Quality, innovation and sustainability are the guiding principles behind everything we do – from research and raw material procurement, to the delivery of cutting-edge products and services for agriculture.

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