

Selko®

IntelliBond®

Hydroxy trace minerals for dairy cattle

trouw nutrition
a Nutreco company

The importance of trace minerals

Trace minerals support an array of biological functions required for proper immune function, reproduction, and growth. Trace minerals are present in forages and other feeds used in cattle diets and, with the exception of cobalt, meet the requirements of rumen microbes. However, supplementation is needed to meet the animal's needs.

COPPER
Supports joint health, blood cells, immunity, fertility, and proper iron metabolism.

ZINC
Contributes to protein accretion, immune function, vitamin utilisation, fertility, skin integrity and a large number of enzymatic processes.

MANGANESE
Contributes directly to healthy bone and cartilage formation, enzyme function, immunity and fertility.

Antagonists

Antagonists are minerals or compounds that reduce the availability of another mineral by forming complexes that reduce absorption in the intestinal tract. This typically occurs in the rumen. Antagonists can come from feedstuffs in the diet, soil contamination (or ingestion) and drinking water. Common antagonists can include sulphur, phytates, iron, molybdenum, oxalates, fibre particles and mineral imbalances in the ration.

Trace minerals are essential nutrients required by all living organisms

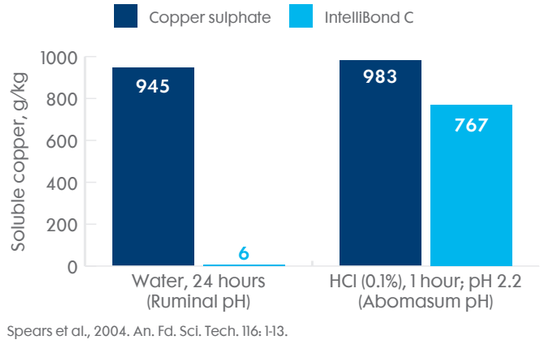
An animal's basic requirements can be achieved in part via trace minerals present in a ration's basal ingredients (silage, hay, grains, etc.), but research has indicated opportunities to optimise mineral nutrition. While the copper, zinc and manganese supplied via basal ingredients meet the microbial requirements of the rumen microflora, they are not sufficient to meet the total trace mineral requirements of the animal.

To achieve this objective, we must provide a trace mineral source that is capable of meeting the incremental needs of the animal in a consistent, cost effective manner. Achieving consistent delivery of an optimised level of trace minerals is important to maintain dairy animal productivity and well-being. IntelliBond hydroxy trace minerals are able to effectively bypass costly rumen reactions with other essential nutrients and microflora to enable more efficient delivery and absorption of essential nutrients within the animal's intestinal tract. Once absorbed, IntelliBond minerals are readily available to the animal to support many essential functions.

IntelliBond® C, IntelliBond® Z and IntelliBond® M

Strong covalent bonds and a unique crystalline structure limit the exposure of IntelliBond hydroxy trace minerals to antagonists in the feed and in the rumen. Slow dissociation of IntelliBond occurs in the abomasum, making the mineral available for absorption by metal transporters in the intestinal tract

Figure 1. Effect of copper source on in vitro solubility.

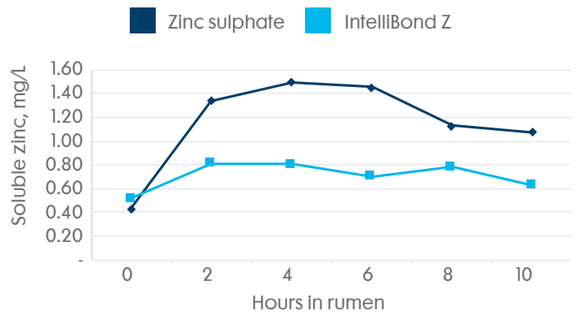


Spears et al., 2004. An. Fd. Sci. Tech. 116: 1-13.

Smart Minerals: Rumen stability

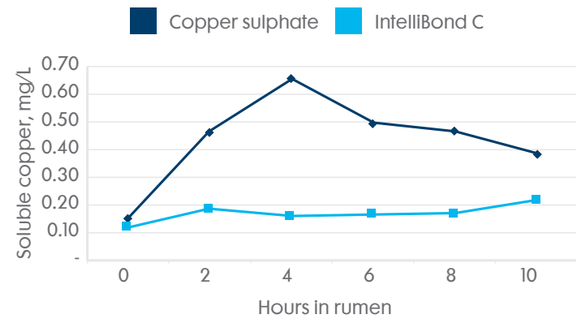
IntelliBond hydroxy trace minerals may have low solubility in the rumen environment.

Figure 2. IntelliBond Z may have lower zinc solubility in the rumen.



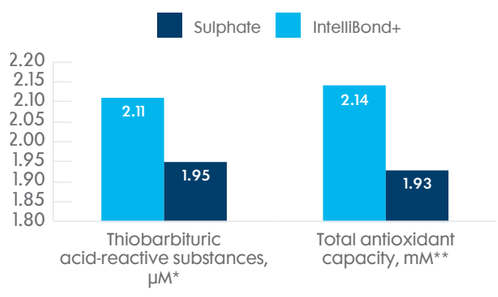
P<0.05
Weigel et al., 2017. J. Dairy Sci. Vol. 100 E-Suppl. 2. (Abstr.)

Figure 3. IntelliBond C may have lower copper solubility in the rumen.



P<0.04
Weigel et al., 2017. J. Dairy Sci. Vol. 100 E-Suppl. 2. (Abstr.)

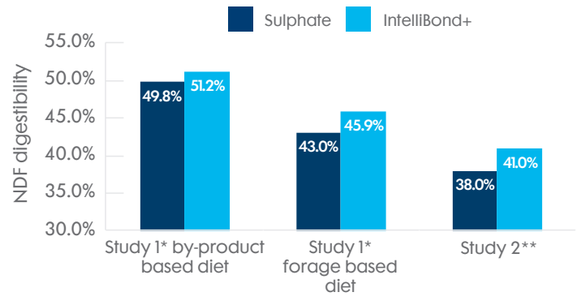
Figure 4. Oxidative balance graph.



**P*=0.03
***P*=0.07
Yasui et al., 2014. J. Dairy Sci. 97:3728-3738. (TRS 50)
+IntelliBond: IntelliBond C, IntelliBond Z + IntelliBond M.

Figure 5. IntelliBond trace minerals may support improved nuetral detergent fibre (NDF) digestibility.

The low rumen solubility of IntelliBond minerals may minimise the amount of free trace minerals in the rumen. Free trace minerals can be toxic to rumen microbes, including fibre digesting bacteria.



**P*=0.02 Faulkner and Weiss, 2017. J. Dairy Sci. 100:5358-5367. (TRS 39).
***P*=0.09 Weigel et al., 2017. J. Dairy Sci. Vol. 100 E-Suppl. 2. (Abstr.).
+IntelliBond: IntelliBond C, IntelliBond Z + IntelliBond M.

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Smart Nutrition:
IntelliBond C and IntelliBond Z may be more available than copper sulphate and zinc sulphate

IntelliBond is designed for optimal absorption and availability.

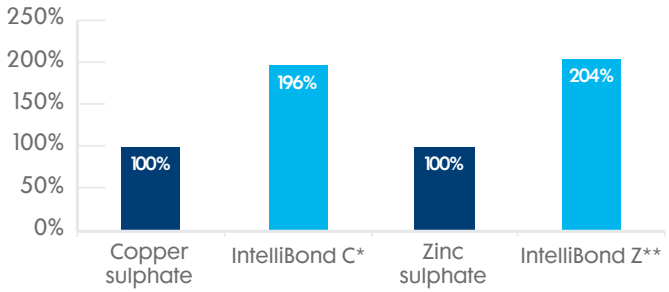
Protected from antagonists

IntelliBond trace minerals are protected from antagonistic interactions in the rumen due to their low solubility.

Preferential intake

When calves were given a choice between supplements identical in everything except copper, zinc and manganese source, they preferred the IntelliBond supplement over the inorganic and the organic supplements. .

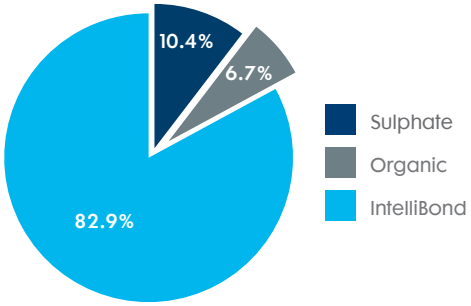
Figure 6. IntelliBond C and IntelliBond Z may be more available than copper sulphate and zinc sulphate.



* *P*<0.04 Spears et al., 2004. Anim. Feed Sci. Technol. 116: 1-13. (TRS 28).
***P*<0.01 Shaeffer et al., 2017. Anim. Feed Sci. Technol. 232:1-5. (TRS 52).

Figure 7. Preferential intake (preference of calves).

Trace mineral source may impact the feeding preferences of calves.



P<0.05
Caramalac et al., 2017. J. Anim. Sci. 95:1739-1750.

IntelliBond® portfolio

IntelliBond products represent one of the highest quality trace mineral technologies available for animal nutrition today, creating a comprehensive portfolio to meet a wide range of animal performance needs. Our minerals are designed to have ideal reactivity to avoid destructive interactions and promote availability, driving optimised animal health and productivity. IntelliBond mineral quality is assured by one of the most robust quality control and quality assurance programmes in the industry.

- **IntelliBond C (Copper hydroxychloride)**
- **IntelliBond Z (Zinc hydroxychloride)**
- **IntelliBond M (Manganese hydroxychloride)**

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



Learn more visit **Selko.com**

Ask you Trouw Nutrition representative how Intellibond can support animal productivity and health.

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