



Technical Bulletin

Information from Phibro Technical Services

Vistore® Advanced Particle (AP) Copper (Cu) 580

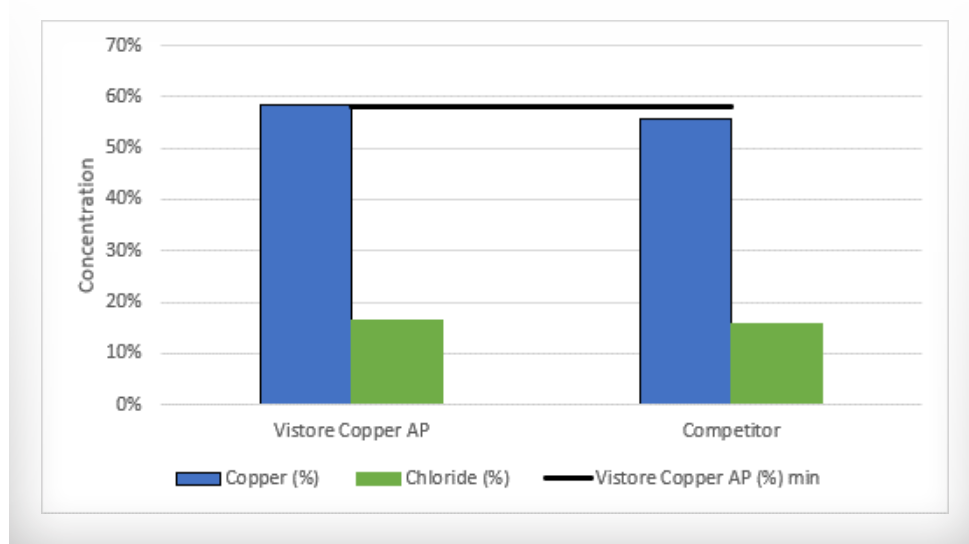
Phibro Animal Health Corporation includes an advanced particle copper source as part of its Vistore mineral portfolio. Vistore minerals are hydroxychloride forms of minerals which may improve bioavailability over other inorganic mineral sources, allowing producers to reduce the inclusion rates and potentially reduce the environmental impact of feeding inorganic minerals. Phibro’s Dynamic Quality Assurance® (DQA®) process begins with a comprehensive safety assessment of the raw materials and processes used to manufacture the ingredients, and continues through detailed, routine analysis to ensure ongoing performance. The process takes analysis beyond testing of the major element (Cu) and contaminants (Pb, Cd, As, Hg, dioxins and furans) to include a 162-point elemental fingerprint scan and crystalline phase identification. Collectively, these processes help ensure a high quality, consistent product for our customers – every time.

Improved Purity & Concentration

Mineral manufacturing processes can vary significantly, affecting mineral quality and consistency. Phibro’s DQA process takes a systematic approach to fully understand mineral ingredients and the manufacturing methods used to process them.

Quantification of major elements are determined through elemental analyses. Figure 1 below shows a comparison of copper and chloride concentrations for Vistore AP Cu 580 and a competitor. Vistore AP Cu 580 has a higher minimum Cu guarantee (58%) compared to the competitive product (54%).

Figure 1. Major Element (Cu) Comparison: Vistore AP Cu 580 vs. Competitor



Phibro analysis, 2022



Improved Quality

Both Vistore AP Cu 580 and the competitor offering are copper hydroxychloride products. Identification of secondary minerals and heavy metal contaminants was performed to assist with understanding the composition of each product. Compared to the competitive product, Vistore AP Cu 580 contained lower heavy metal concentrations for some of the heavy metals of concern (Table 1).

Table 1. Contaminant Levels of Copper Hydroxychloride Minerals

| Element | Copper | |
|----------|-------------------|------------|
| | Vistore AP Cu 580 | Competitor |
| Pb (ppm) | 0.766 | 26.7 |
| Cr (ppm) | 3.31 | 7.03 |
| As (ppm) | 8.11 | 1.38 |
| Cd (ppm) | < 0.25 | < 0.25 |
| Hg (ppm) | < 0.05 | < 0.05 |

Phibro analysis, 2022

Improved Handling

Manufacturing and handling of copper products can be challenging depending on a product’s physical characteristics, such as particle size. Vistore AP Cu 580 was developed with this challenge in mind. Compared to competitive offerings, Vistore AP Cu 580 is a less dense product offering a larger particle size, with the majority of distribution at +80 mesh. The physical characteristics of Vistore AP Cu 580 may allow for improved blending, limited segregation, overall easier material handling, and less dusting during product manufacturing.

Conclusion

Phibro understands the risks associated with raw mineral processing. Phibro’s DQA process ensures our customers are receiving safe, efficacious, consistent, and high quality hydroxychloride mineral products.

- Vistore AP Cu 580
 - Increased Cu concentration by 4% versus the competitor product.
 - Reduced heavy metal contaminants versus the competitor product.
 - Less dense with a larger particle size than the competitor product.

Phibro has distribution rights to this product in the U.S. and many other countries.

This information has been prepared for industry technical professionals only.