



## Technical Data Sheet

Tomorrow's Vision... Today!®

# ACB Bio-Chelate 5

<b>Code Number:</b>	20339
<b>INCI Nomenclature:</b>	Water & Saccharomyces/Zinc Ferment & Saccharomyces/Copper Ferment & Saccharomyces/Magnesium Ferment & Saccharomyces/Iron Ferment & Saccharomyces/Silicon Ferment
<b>INCI Status:</b>	Approved
<b>Suggested Use Levels:</b>	0.5 - 5.0%
<b>Suggested Applications:</b>	Skin and Hair Conditioning and Nourishing

Just as Vitamins are essential for human existence so are Minerals. Minerals play a key role in overall health and well-being. Unlike vitamins, not a single mineral can be synthesized within the human body. Without minerals, vitamins could not be assimilated and many enzymatic reactions could never take place without a mineral acting as a co-factor. Minerals may be found in water as well as in many natural foods. Minerals are constituents of bones, teeth, muscle, blood, soft tissue, and nerve cells.

Minerals may be divided into two categories: major elements and micronutrients. The major elements typically include calcium, phosphorous, silicon, magnesium, sodium, potassium, chloride, and sulfur. The micronutrients consist of iron, copper, iodine, manganese, zinc, fluorine, cobalt, chromium, molybdenum, and selenium.

**ACB Bio-Chelate 5** has been developed to contain 5 essential minerals: Silicon, Magnesium, Copper, Iron, and Zinc, which are derived from the yeast *Saccharomyces cerevisiae*.

Silicon (Si) is an essential trace element which is important in the normal development of bone and connective tissue. Next to oxygen, silicon is the most abundant element on earth. However, it is typically found in the form of silicates which do not provide bio-available dietary silicon. Silicon plays an important role in the initial stages of bone development, when the protein matrix (which contains collagen and glycosaminoglycans) is constructed.

Magnesium (Mg) is typically found in legumes, dark green vegetables, nuts, whole grains, and cocoa. Mineral water may also be an important source of magnesium. Magnesium plays a key role in at least 300 different enzymatic reactions. Transfer of phosphate groups, the acylation of coenzyme A in the initiation of fatty acid oxidation, and the hydrolysis of phosphate and pyrophosphate are all enzymatic reactions in which magnesium takes part. Magnesium helps to regulate the neuromuscular activity of the heart. It plays a key role in maintaining normal heart rhythm. It is also necessary for proper calcium & vitamin C metabolism.





# ACB Bio-Chelate 5

Copper (Cu) is important in the absorption and utilization of iron due to its role as a cofactor in several oxidative enzymes. For the skin, it is helpful in oxidizing vitamin C and works to form elastin. Copper is as important to hair. It is key to the formation of disulfide cross-linkages in keratinization, which contribute to hair growth. Copper is an essential cofactor for tyrosinase.

Iron (Fe) is a trace mineral found in every cell of the body. It is an essential mineral for the body because it is part of the hemoglobin in red blood cells and myoglobin in muscles. The role of both of these molecules is to carry oxygen to the tissues in order to maintain basic life functions. Iron is also needed in obtaining a healthy immune system and for energy production. It is essential for protein formulation, cell maturation and a carrier of oxygen throughout the body.



Zinc (Zn) is known as a component of nearly a hundred enzymes involved in metabolic processes, most of which work with the red blood cells to move carbon dioxide from the tissues to the lungs. This mineral functions as an important antioxidant, promotes normal growth and development and aids in wound healing. Zinc also helps to maintain normal levels of vitamin A in the blood and helps in the protein synthesis DNA and RNA. Zinc is part of the active site in superoxide dismutase, an antioxidant enzyme, which is part of the cell's natural defense system. It plays a role in biochemical reactions of the extra-cellular matrix, while enhancing cell division, repair and growth.

## DNA microarray results indicate that **ACB Bio-Chelate 5:**

- Enhances Barrier Function
- Provides Anti-inflammatory Effects
- Increases Growth Factor Expression
- Decreases Stress Related Factors
- Increases Cellular Energy Production

### References:

- 1) Weeks, Mary Elvira; Leichester, Henry M. (1968). "Elements Known to the Ancients". Discovery of the Elements. Easton, PA: Journal of Chemical Education. pp. 29–40.
- 2) Ashmead, H. DeWayne (1989). Conversations on Chelation and Mineral Nutrition. Keats Publishing. ISBN 0-87983-501-X.
- 3) Lamore SD, Cabello CM, Wondrak GT (2010). "The topical antimicrobial zinc pyrithione is a heat shock response inducer that causes DNA damage and PARP-dependent energy crisis in human skin cells". Cell Stress Chaperones 15 (3): 309–22.
- 4) Milbury, Paul E.; Richer, Alice C. (2008). Understanding the Antioxidant Controversy: Scrutinizing the "fountain of Youth". Greenwood Publishing Group. p. 99
- 5) R. Baselt, Disposition of Toxic Drugs and Chemicals in Man, 8th edition, Biomedical Publications, Foster City, CA, 2008, ISBN 0962652377 pp. 875–877.
- 6) Rahman, Atta-ur-. "Silicon". Studies in Natural Products Chemistry. 35. p. 856

