SAFETY DATA SHEET

IntelliBond Vital 5

1. Identification of Substance and Supplier

GHS Product Identifier	IntelliBond®VITAL5
Alternative Names	Not Applicable
Recommended Use of Chemical	Animal feed additive
Use Restrictions	IntelliBond®VITAL5 is intended for use as a source of mineral supplements in animal feeds or research purposes only.
Manufacturer's Information	Micronutrients USA LLC 1550 Research Way Indianapolis, Indiana 46231 317-486-5880
Emergency Phone Number	CHEMTREC (800)424-9300 Micronutrients (317) 486-5880

2. Hazards Identification

GHS Classification of Substance	Carcinogen, Category 1B Reproductive Toxicity, Category 1B Acute Toxicity, Category 5	
National or Regional Information	Not Applicable	
GHS Label Elements	DANGER May damage fertility or unborn child. May cause cancer May be harmful if swallowed 	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood Use personal protective equipment as required. If exposed or concerned, get medical attention Store locked up Dispose of contents / container in accordance with local / regional / national / international regulation.
Other Hazards	None Known	

3. Composition / Information on Ingredients

Ingredient Name	CAS Number	EC Number	Percent of Total Weight
Zinc Hydroxychloride ($Zn_5(OH)_8Cl_2 \cdot (H_2O)$)	12167-79-2	Not Applicable	46-56%
Manganese Hydroxychloride *($Mn_2(OH)_3Cl$)*	39438-40-9	Not Applicable	22.7-32.7%
Copper Hydroxychloride *($Cu_2(OH)_3Cl$)*	1332-65-6	215-572-9	4.5-8.5%
Cobalt Carbonate *($CoCO_3$)*	513-79-1	208-169-4	0.6-1.1%
Calcium Iodate *($Ca(IO_3)_2$)*	7789-80-2	232-191-3	0.5-1.0%
Inert Ingredients	Not Applicable	Not Applicable	Balance

4. First Aid Measures

Eye	Wash with plenty of water for at least 15 minutes. If irritation persists, seek medical advice.
Skin	Wash exposed skin with soap and water. If skin irritation persists, seek medical advice.
Ingestion	Rinse mouth. Contact Poison Control Center and occupational physician.
Inhalation	Remove individual to fresh air and seek medical advice.
Note to Physician	Treat symptomatically.

5. Firefighting Measures

Suitable extinguishing media	Utilize compatible fire extinguishing media, including water, and any dry media, carbon dioxide (CO_2).
Fire and Explosion Hazards	Material is not considered to be combustible. Material may melt with decomposition under fire conditions.
PPE and precautions for firefighters	Firefighters should wear complete protective clothing including self-contained breathing apparatus. Dike fire control water for later disposal. Do not allow to enter drains, sewers or watercourses. Decomposition may product toxic vapors/gases. Cobalt Oxide Dust.

6. Accidental Release Measures

Suggested PPE, Equipment and Procedures	Ensure adequate ventilation. Avoid breathing dust and direct contact. Wear disposable coveralls, FFP2 / P2 filter mask, rubber gloves, and protective eye goggles or total face protection.
Environmental Precautions	Prevent the product from entering water courses or sewers. Spillages or uncontrolled discharges unto watercourses must be alerted to the appropriate regulatory body(ies).
Methods and materials for containment and cleanup	Sweep spilled substances in to containers, if appropriate - moisten first to prevent dust formation. Collect spillage, transfer to lidded container for disposal or recovery.

7. Handling and Storage

Handling Precautions	Do not handle until all safety precautions have been read and understood. Avoid dust formation. Do not breathe dust. Handle in a well-ventilated area or wear adequate respiratory protection (filter type P100 may be appropriate). Avoid contact with skin and eyes using working clothes, gloves and protective glasses. Practice good personal hygiene when handling product. Remove heavily contaminated clothing. Do not eat, smoke or drink during use. After use keep the packaging tightly closed. Wash hand thoroughly after handling.
Storage Precautions	Store in a cool dry place. Do not allow bags to become wet or exposed to fire.

8. Exposure Controls/Personal Protection

Occupational Exposure Limit Values	No threshold limit values have been established for materials contained in this mixture (Zinc Hydroxychloride, Manganese Hydroxychloride, Copper Hydroxychloride) Cobalt Carbonate's TLV is listed in the following table.

Zinc Dust	ACGIH 8 Hr TLV: 1 mg/m^3	OSHA 8 Hr PEL: 1 mg/m3
Manganese Dust	NIOSH 15 min STEL: 3mg / m^3	OSHA 8 Hr PEL: 1 mg/m3
Copper Dust	ACGIH 8 Hr TLV: 1 mg/m^3	OSHA 8 Hr PEL: 1 mg/m3
Cobalt Carbonate	ACGIH 8 Hr TLV: 0.02 mg / m^3.	Not Established
Calcium Iodate	Not Established	Not Established

Engineering Controls	Local or general area ventilation to control dust
Individual Protection Measures	Protective eyewear, respiratory protection with filter type P(EN143 or EN405), tyvek coveralls, and butyl rubber, neoprene, or PVC gloves may be appropriate. Good personal hygiene is recommended while handling materials. Personal protective equipment should be used as required by end users.

9. Physical and Chemical Properties

Appearance	Brown particulate, (typical particle size 200-300 μm)
Odor	Odorless
Odor Threshold	Not Applicable
pH	6.0 – 7.5 in water, measured by EPA Method SW846-9045
Melting Point / Freezing Point	Not Applicable
Initial Boiling Point and Boiling Range	Not Applicable
Flash Point	Not Applicable
Evaporation Rate	Not Applicable
Flammability	Not Flammable
Upper/Lower flammability or explosive limits	Not Applicable
Vapor Pressure	Not Applicable
Vapor Density	Not Applicable
Relative Density	3.2 -3.6
Solubility	Insoluble in water, Soluble in mineral acids, Soluble in ammonia, amine and EDTA solutions under complex formation
Partition Coefficient; n-octanol / water	Not Applicable
Auto-Ignition Temperature	Not Applicable
Decomposition Temperature	329°F

10. Stability and Reactivity

Chemical Stability	Stable
Possibility of Hazardous Reactions	Hazardous polymerization will not occur.
Conditions to Avoid	None Known
Incompatible Materials	None Known
Hazardous Decomposition Products	May decompose and produce Metal Chloride/Oxide fumes when heated.

11. Toxicological Information

Exposure Routes	Dermal absorption, Inhalation, Ingestion
Delayed Effects	None Known.
Immediate Effects	Symptoms of intake of harmful levels of zinc include: Convulsions, vomiting, abdominal pain, shock and death. Symptoms of acute manganese exposure include: lung irritation and potential neurological effects. Symptoms of intake of harmful levels of copper include: convulsions, vomiting, abdominal pain, diarrhea, and yellow skin (jaundice) Eye Hazards: Potentially moderately irritating. Metal chloride compounds have been reported to cause eye irritation, which may be an allergic reaction. Ingestion Hazards: May be harmful if ingested. Inhalation Hazards: May be harmful if inhaled. Inhalation of metal dust has caused damage to red blood cells, liver, pancreas, and lung cells.

Chronic Effects	Skin Hazards: Prolonged exposure may have the potential for moderate skin irritation. Metal chloride compounds have been reported to cause skin irritation, which may be an allergic reaction. Discoloration of skin may occur, but it is not indicative of injury or illness. Chronic effects associated with cobalt carbonate: Cobalt Carbonate is present in this mixture at greater than 0.1%. The information presented below pertains to cobalt carbonate, and not the mixture as a whole. The derived no effect level for industry (inhalation) is 80.7µg/m^3. The derived no effect level for consumers (inhalation) is 12.µg/m^3. The derived no effect level for consumers (oral) is 19.2µg/kg bw/day Cobalt carbonate is suspected of causing genetic defects. Cobalt carbonate may cause cancer Cobalt carbonate may damage fertility of the unborn child. Chronic effects associated with calcium iodate: Calcium iodate is present in this mixture at greater than 0.1%. It may cause thyroid adenoma, goiter, iodism, skin rashes, headaches, running nose, weakness, anemic, and general depression.
Acute Toxicity Estimates	All trace minerals can trigger acute toxicity effects. LD_{50} data for manganese hydroxychloride and zinc hydroxychloride have not been established. Copper hydroxychloride Oral (rat) LD_{50} 1,440mg/kg. Cobalt carbonate Oral (rat) LD_{50} 697mg/kg. Cobalt carbonate Dermal >2000mg/kg. Calcium iodate Oral (mouse fasting) LD_{50} 531mg/kg body weight. Calcium iodate Oral (mouse fed) LD_{50} 1,177 mg/kg body weight. Calcium iodate Eye Irritation (rabbits) slight reaction

12. Ecological Information

Ecotoxicity	Ecotoxicity for this mixture has not been established.
Persistence and degradability	The product is not environmentally persistent. It will release copper, manganese, zinc, iodine, and cobalt as trace minerals when it reacts with acids, bases, or complexing reagents.
Bioaccumulative potential	Copper, manganese, zinc, iodine, and cobalt are essential trace minerals which are needed to sustain normal metabolic functions. These materials are not bio-accumulative and are readily cleared and excreted.
Mobility in soil	Not Established
Other adverse effects	None Known

13. Disposal Considerations

Description of waste residues	Waste resides are not anticipated outside of commercial packaging or unintended spills of material.
Safe Handling and Disposal methods	Dispose of contents/containers in accordance with local/regional/ international regulations.

14. Transport Information

UN Number	Not Regulated by US DOT/ADR
UN Proper Shipping Name	Not Regulated by US DOT/ADR
Transport Hazard Class(es)	Not Regulated by US DOT/ADR
Packing Group	Not Regulated by US DOT/ADR
Marine Pollutant	No
Special Precautions	Not Applicable

15. Regulatory Information

Applicable Regulations	**US Regulatory Information** TSCA Chemical Substances Inventory; Copper, Zinc, Cobalt, Iodine, and Manganese are exempted per 720.3(e)(6). SARA Hazard Classes: SARA – Acute Health Hazard SARA – Chronic Health Hazard SARA Title III – Section 313 Supplier Notification Copper, Zinc, Cobalt and Manganese compounds are subject to the reporting limit requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372. Copper, Zinc, Cobalt and Manganese are subject to the reporting limit requirements of Section 313 of the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, Toxic Release Inventory, and 40 CFR 372.

16. Other

Disclaimer	Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).
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