



# BW-Fusion HF 12%

## Guaranteed Analysis

Total Humic Acid (HA) and  
Fulvic Acid (FA) .....12%\*

\*Determined using Colorimetric Method

### Derived From:

Oxidized leonardite

### Physical Properties:

Form: Liquid

Appearance: Dark black-brown, having  
no characteristic odor.

Weight: 9.07 lb/gal, 1.10 kg/L

pH: 9.0–10.0

### Caution:

**Keep out of reach of children. Ingestion of this product may cause gastrointestinal irritation or pain. The liquid and mists may be irritating to the eyes and skin. Inhalation of mists may be irritating to the entire respiratory tract.**

### Storage and Disposal:

Keep product in original container. Do not transfer into food or drink containers. Triple rinse container when empty for recycling. Always dispose of container in accordance with local, state, and/or federal regulations. Do not store this product below 50°F (10°C) or above 90°F (30°C).

### Conditions of Sale:

The information contained in this bulletin is believed to be accurate and reliable. Buyer and user acknowledge and assume all liability resulting from the use of this material. Follow directions carefully. Timing, method of application, weather, crop conditions, and other factors are beyond the control of the seller.

## The Humic and Fulvic Acid Solution for Soil Fertility

BW-Fusion humic and fulvic acid products are processed from naturally occurring, oxidized leonardite ore. Humic and fulvic acids add organic matter to soils—which stimulates soil microbial life and soil fertility, enhances plant nutrient availability and uptake, improves root development and root mass and growth, and increases crop quality and yield.

**BW FUSION 12%** has excellent stability under both high and low soil pH conditions. It is highly effective for complexing metal ions and for preparing nutrient solutions at various pH ranges (0.5–14.0). **BW FUSION 12%** can be blended and pumped easily and will not plug nozzles or gel during storage.

### Benefits of Use:

- Promotes even coverage/distribution of humic/fulvic acid for sustainable carbon benefit
- Short-term soil organic-matter building
- Promotes conversion of fertilizer into plant-available food
- Increases nutrient mineralization
- Sustainable soil microbial activation

### Deficiency Symptoms—When to Apply:

- Low organic matter
- Low fertility soil
- Continuous use, tired soils

### Application Instructions:

- Designed to be applied to the soil. Best results will be obtained when application is concentrated in the active root zone or when applied directly to the soil followed by shallow cultivation. Soil moisture is required for maximum bioactivity. If soil is dry, moisture should be provided by irrigation.
- Can be applied in combination with compatible plant growth regulators, pesticides, or other liquid or granular fertilizers.
- Avoid spreading during high humidity, or mixing with high moisture fertilizers such as urea. Application timing, intervals, and rates may vary according to individual crop requirement, stage of development, available nutrient levels in the soil, and overall nutritional status of the crop.
- Applications can be made as often as every 15–30 days, as needed. See table below for specific rate instructions. Consult your local BW-Fusion representative or other agricultural specialist for crop-specific recommendations.
- SHAKE WELL BEFORE USING.

APPLICATION METHOD	APPLICATION RATE	
	Field Crops / Tree or Vine Crops	
Soil banded, injected, side dress, drip tape, or micro-sprinklers	Up to 1 gallon/acre, 10 liters/hectare	Up to 2 gallons/acre, 20 liters/hectare
Sprinklers: solid set, drag lines, linear, or pivot at 100% speed	Up to 2 gallons/acre, 20 liters/hectare	Up to 4 gallons/acre, 40 liters/hectare
Soil broadcast spray incorporated, flood or furrow irrigated	Up to 4 gallons/acre, 40 liters/hectare	Up to 8 gallons/acre, 80 liters/hectare



# The Benefits of Humic Substances\*

## For Agricultural Crops

The Humic Products Trade Association has conducted a review of the scientific literature and has approved three primary label claims for agricultural application of humic substances:

- **Improved root mass and growth**
- **Enhanced nutrient availability and uptake**
- **Higher crop yield and quality**

How are these benefits accomplished? We'll discuss a few of these mechanisms here:

- The presence of carbon-containing humic substances in soil results in electrical processes that cause very small soil particles to attract each other to create a crumb structure in the top soil, which has open spaces that allow gaseous exchange with the atmosphere and better water infiltration. This resulting soil structure also **increases the water-holding capacity of soil, protecting plants during times of drought.**
- Energy stored within the carbon bonds of humic substances represents **an excellent food source for soil microorganisms** that perform a wide range of functions that contribute to soil and plant health—everything from **solubilization of minerals that are bound up in the soil to releasing antibiotics that protect plants from pests.**
- Humic substances have an insulating property that helps to stabilize soil temperatures and slow the rate of water evaporation, which **protects plants during change periods of heat and cold.**
- Humic substances can also **stabilize or inactivate certain soil enzymes released by plant pathogens**, rendering them less able to damage plants.
- Further, humic substances can **buffer soil pH**, making the soil less alkaline or less acidic. This results in **helping trace elements that may have been bound up in the soil** due to acidic or alkaline conditions to now become available to the plants as nutrients.
- Additional soil benefits are that **toxins left in the soil from pesticides can be degraded** or inactivated by humic acids, and the addition of humic substances to soils containing excessive salt can **help reduce the salt concentration**, making the soil more suitable for plant growth.
- Humic substances help regulate the retention and release of plant nutrients. The **higher cation exchange capacity (CEC)** that occurs when humic substances are present in soil increases a soil's ability to retain positively charged plant nutrients (e.g.,  $\text{NH}_4^+$ ,  $\text{Mg}^{2+}$ ,  $\text{Ca}^{2+}$ , and  $\text{Na}^+$ ) and **reduces the potential for leaching.** Soil CEC also **influences the application rates of lime and herbicides required for maximum effectiveness.**
- When adequate levels of humic substances are present in soil, **plants have an enhanced ability to take up nitrogen, phosphorus, and potassium**—reducing the amounts of N-P-K fertilizers required.
- Application of humic or fulvic acids to seeds **speeds up seed germination, enhances root development, and activates seedling growing points.**
- Humic substances **influence plant growth hormones and provide free radicals to plant cells**, which have positive effects on seed germination, root initiation, and plant growth in general.
- Humic and fulvic acids, while not fertilizers themselves, are **excellent fertilizer carriers and activators.** Foliar fertilizers containing humic or fulvic acids have been demonstrated to be from **100% to 500% more effective** than similar fertilizers applied to the soil. Applications can be timed to activate vegetative growth, flowering, fruit set, or filling and ripening of fruits.

\*Adapted from *The Value of Humic Substances in the Carbon Life Cycle of Crops: Humic Acids, Fulvic Acids, and Beyond*, by Larry Cooper with Rita Abi-Ghanem, PhD. Available at <https://humagro.com/wp-content/uploads/2017/02/The-Value-of-Humic-Substances-in-the-Carbon-Lifecycle-of-Crops.pdf>