

PERSIST BIOCHAR TECHNICAL DATA SHEET

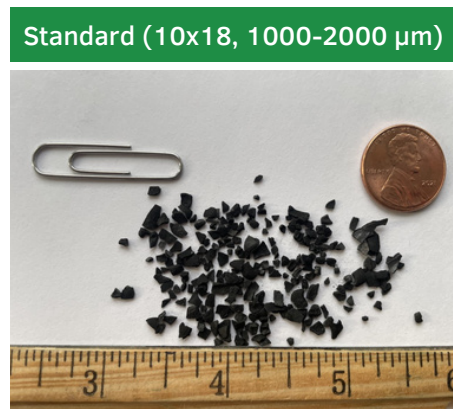
1) PRODUCT DESCRIPTION:

Persist™ Biochar is produced in California from 100% pistachio shells using VGrid's proprietary clean energy process. VGrid's high-temperature gasification system produces biochar with superior porosity and purity. Persist™ Biochar is post-processed into specific particle sizes for ease of application:

<i>Whole Shell</i>	<i>Unprocessed:</i>	Approx. 250 lbs / cubic yard
<i>Large Granular</i>	<i>+10 Mesh (> 2 mm):</i>	Approx. 450 lbs / cubic yard
<i>Standard Grain</i>	<i>10x18 Mesh (1-2 mm):</i>	Approx. 500 lbs / cubic yard
<i>Fine Particle</i>	<i>18x70 Mesh (0.2-1 mm):</i>	Approx. 625 lbs / cubic yard
<i>Ultra-Fine</i>	<i>-70 Mesh (< 0.2 mm):</i>	Approx. 740 lbs / cubic yard
<i>Micronized</i>	<i>-200 Mesh (<0.075 mm):</i>	Approx. 750 lbs / cubic yard

Custom sizing is also available. Micronized Biochar (-200 mesh) is a powder intended for liquid applications. See below for examples of select particle sizes.

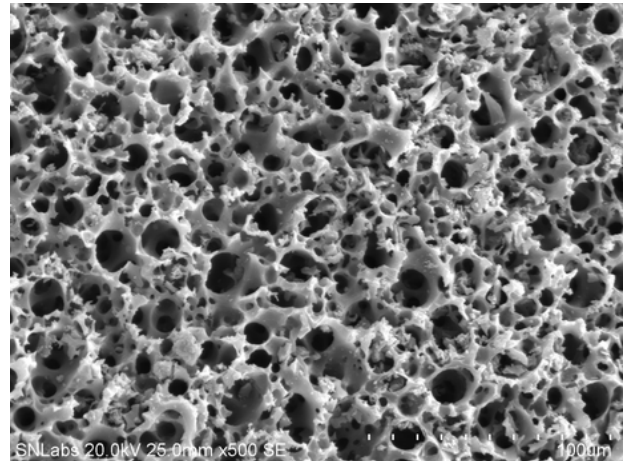
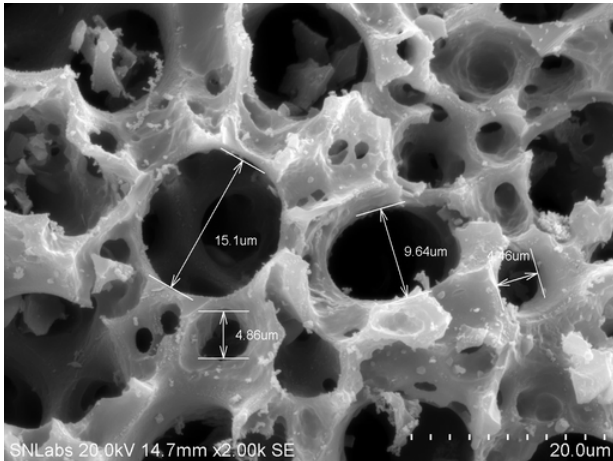
Persist™ Biochar is available in 2.0 cubic yard super sacks, 1.5 cubic foot large bags, and 3 quart small bags. A single pallet can fit 2 super sacks or 60 large bags. Contact VGrid for bulk pricing/shipping.



2) BENEFITS:

In addition to Persist Biochar's role in sequestering CO₂ and reversing climate change, it helps restore the natural productivity of the soil. In multiple crop trials, Persist Biochar has been shown to improve yields while requiring less water and fossil fuel-based fertilizers. Most of the benefits summarized below result from Persist Biochar's large surface area-to-volume ratio (*see SEM images below highlighting the porosity*). Each gram has an average surface area of 200-300 square meters.

- Carbon Sequestration: Removes 3x its weight in CO₂, helping to reverse climate change.
- Water Savings: Soils amended with Persist biochar retain moisture up to six times longer.
- Nutrient Availability: Nutrients are held in the pore network longer rather than leaching away.
- Microbial Enhancement: Provides a structure for microbial colonization in soil.
- Contaminant Filtration: Biochar's macro, micro, and nanopores trap and hold contaminants.
- Soil pH Buffering: Helps soil resist a change in pH levels when adding small amounts of acid.
- Cation Exchange Capacity: Increases CEC, the ability of soil to retain plant nutrients.



3) CERTIFICATIONS AND APPROVALS:



4) PRODUCT SPECIFICATIONS:

Carbon: 88.0% (dry weight basis)

Hydrogen: 1.7% (dry weight basis)

Nitrogen: 1.1% (dry weight basis)

Oxygen: 2.9% (dry weight basis)

Ash: 6.2% (dry weight basis)

Moisture: Varies by particle size

Bulk Density: Varies by particle size

pH Value: 8-9 (alkaline)

Volatile Matter: 11.5%

Surface Area (BET): 244 m²/g

The above specifications are averages and do not represent a guaranteed analysis. Select terms and conditions may apply. Please contact VGrid for a copy of complete third-party laboratory analysis.

5) INSTRUCTIONS FOR USE:

Retail customers: Please follow the instructions below and contact VGrid if additional guidance is needed.

Commercial customers: Please contact VGrid to review specific application instructions.

Add Persist Biochar to the Soil Together with Your Preferred Nutrient Regimen:

For best results, VGrid recommends applying biochar and organic nutrients together (composts, fertilizers, and/or biologicals). Since nutrients are held in the biochar pores after initial application, the biochar can, in certain circumstances, temporarily reduce nutrient availability to plants.

Composting:

Mix 1 part Biochar with 1 to 4 parts compost. Persist Biochar has been shown to improve microbial activity in compost piles and help reduce Nitrogen loss (among other benefits). The compost-biochar blend can then be added to the soil (1 part blend added to 2 to 4 parts soil for best results).

Planters, flower beds, and nursery pots:

Mix 1 part Persist Biochar with 6 parts soil, then water. For initial watering, thoroughly saturate the biochar and soil. For additional watering, check soil moisture and lightly water as needed.

General horticulture and garden use:

Prepare soil for planting by spreading a 25lb bag of Persist Biochar over a 20 sq ft area (approximately 1 inch deep). Till or rake in vigorously. Form rows/mounds and plant seeds, then water. For initial watering, thoroughly saturate the biochar and soil. If you need additional watering, please check soil moisture and lightly water as required.

Pre-lawn planting or sod laying:

Soil Preparation: Mix 25 lbs of Persist Biochar over 10 sq ft of tilled ground and rake biochar into the soil. Roll or flatten soil and lay sod or plant seeds. For best results, after seeding or laying down sod, sprinkle biochar generously over the entire area (approximately one 25 lb bag over a 40 sq ft area).

Watering: Before seeding or laying sod, moderately saturate the biochar and soil, and let stand until the water soaks in. After sprinkling Persist Biochar over laid sod or planted area, water lightly to dampen and then water only as needed.

6) CARE AND HANDLING:

Refer to the Persist Biochar MSDS for required safety and handling information:

<https://vgridenergy.com/wp-content/uploads/2022/07/Persist-BIOCHAR-SDS.pdf>



CAUTION: Skin Irritant - Wear gloves when handling. Allergic reactions may occur in people sensitive to organic and mineral dust or have sensitive skin. A black powder can be deposited on the skin if light contact is made.



CAUTION: Eye Irritant - Wear goggles or take other precautions to prevent airborne dust from entering the eyes are necessary. If in the eyes, rinse cautiously with water for several minutes.



CAUTION: Respiratory Irritant - Use outside or in a well-ventilated area only. Wear a mask or other appropriate breathing protection to avoid inhalation of biochar particles. An N95 or equivalent mask is recommended.



DANGER: Combustion and Explosion Risk - Flammable solids, Category 1 combustible dust. Ensure biochar and airborne biochar particles do not come in contact with a spark or flame. Use outside or in a well-ventilated area only with a code-compliant fire protection system. **Risk of serious injury or death.**

7) AVAILABILITY:

Retail customers can purchase Persist Biochar online at www.persistproducts.com or through third-party online retailers Amazon (www.amazon.com) and Lowe's (www.lowes.com). Bulk orders can be placed directly by contacting VGrid Energy Systems at the following:

Address: 513 Calle San Pablo, Camarillo, CA 93012 --- **Website:** www.persistproducts.com

Email: info@vgridenergysystems.com --- **Phone:** (805) 482-9040