



P: +989173352952

W: www.makran2025.ir

A: Unit 50, Homa Building, Pasdaran Boulevard, Bandar Abbas, Iran

E: Info@Makran2025.ir

makran.bazargan2025@gmail.com

Advanced Biomass Carbon for Renewable Energy Applications Engineered Pistachio Shell–Derived Carbon from Iran High-Quality Sustainable Carbon Platform for Clean Energy Systems

Executive Overview

We offer engineered, non-activated carbon derived from Iranian pistachio shells, specifically designed for renewable energy and sustainable industrial applications.

Key differentiators:

- Superior feedstock quality: Iranian pistachio shells have higher fixed carbon content, lower ash, and more stable structure than pistachio shells from other regions.
- Engineering flexibility: Carbon properties (density, structure, particle size) can be precisely tuned.
- Temperature-controlled production: Customizable to meet application-specific requirements.
- Scalable platform: Suitable for industrial-scale continuous production.
- Sustainable biomass origin: Fully renewable and environmentally friendly.

This carbon is currently non-activated, but it can serve as a precursor for activated carbon or advanced carbon materials if needed.

Strategic Relevance to Renewable Energy Companies

Renewable energy producers are increasingly moving away from using low-value agricultural or municipal waste due to:

- Contaminants and inconsistent quality
- Lower energy content
- Difficulty in process standardization

Our Iranian pistachio shell carbon offers a premium, uniform, and high-purity biomass carbon without relying on low-value waste streams.



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Key benefits for energy companies:

- Consistent thermal and chemical properties
- Avoids operational issues common with municipal/unsorted biomass
- Compatible with energy storage, hybrid energy systems, and industrial thermal processes
- Supports sustainability and ESG objectives

Raw Material Advantage

Iran is the world's leading producer of high-quality pistachios. The shells produced:

- Contain higher fixed carbon than global alternatives
- Have low ash and minimal contaminants
- Feature a naturally porous and mechanically stable structure
- Provide an excellent biomass carbon platform for multiple applications

This gives our carbon a competitive advantage over imported biomass sources or waste-based carbons.

Production Platform & Engineering Flexibility

Our production system is a fully engineering-adjustable carbonization platform:

- Carbonization temperature tunable for specific applications
- Heating rate and residence time fully controllable
- Particle size and density can be customized
- Structure can be engineered to target specific energy or industrial needs

Temperature-dependent output:

- Low temperatures → softer, biochar-like carbon suitable for soil or environmental projects
- High temperatures → stable, conductive carbon suitable for energy storage or thermal applications

This allows renewable energy companies to select precisely the carbon type they need without relying on heterogeneous waste streams.



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Industrial Applications for Renewable Energy

1. Biomass-Based Energy Systems

- High-quality solid fuel for renewable power plants
- Co-firing material for hybrid systems
- Carbon-neutral thermal input material
- Industrial boilers and energy processes

2. Precursor for Energy Storage Carbon

- Battery-grade carbon material precursor
- Supercapacitor carbon precursor
- Hydrogen adsorption and storage research material
- Conductive carbon filler

3. Carbon for Hybrid Energy Infrastructure

- Conductive carbon components in energy systems
- Reinforcing material in composites
- Thermal stability enhancement in equipment
- Lightweight, high-purity carbon additive

4. Biochar Applications for Carbon Management

- Long-term soil carbon stabilization
- Regenerative agriculture projects
- Climate-positive carbon management strategies

Environmental & ESG Alignment

- Converts high-quality agricultural waste into industrial-grade carbon
- Avoids use of low-quality municipal or organic waste
- Reduces carbon footprint compared to fossil-based carbon
- Supports circular economy principles
- Compatible with ESG-compliant supply chains



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Key Technical Strengths

- 100% biomass-based, renewable feedstock
- High fixed carbon, low ash
- Stable carbon matrix
- Engineering-adjustable properties
- Scalable production model
- Convertible to activated carbon or advanced carbon materials

Conclusion

Iranian pistachio shell carbon provides renewable energy companies with a high-quality, uniform, and fully customizable biomass carbon platform, eliminating the need for low-value waste-based materials while offering full compatibility with clean energy and energy storage systems.

We are ready to provide:

- Technical specifications
- Sample materials
- Production parameter customization
- Collaborative development discussions

Best regards,

Marzieh Moheb Ali

Official Iranian Trader