

THE BIO FIBER SYSTEM™

Technical Publication Series

Bio Fiber Performance Summary

For Owners & Stakeholders

Bio Fiber Explained Simply

For Building Owners • Developers • Lenders • Investors • Public Agencies • Facilities Teams • Community Stakeholders

Bio Fiber Industries™

Natural Materials Used Wisely™

About This Guide

You should not need to be a building scientist to understand why a wall system is being specified for your project.

Owners, developers, lenders, investors, and other project stakeholders need clear answers to practical questions:

Will it perform?

Will it last?

Is it safe?

Will it help manage energy costs?

What makes it different from a conventional wall?

And does choosing a hemp-based material create additional risk?

This guide answers those questions in plain language.

Bio Fiber Industries develops hemp and bio-based building materials for residential and commercial applications, including hempcrete and hemp insulation. The company's construction work is positioned around sustainable, energy-efficient materials for architects, designers, engineers, builders, and the people who ultimately occupy the buildings. ([Bio Fiber Industries](#))

The Short Version

What Is the Bio Fiber System?

The Bio Fiber Construction System is a wall-system approach built around natural, hemp-based materials.

Rather than thinking about the wall as a collection of unrelated products, Bio Fiber approaches it as a coordinated assembly.

Depending on the project, that assembly may incorporate:

- Bio Fiber panels
- Hemp-based blocks
- Bio-based insulation
- Compatible finishes
- Supporting structural and envelope components

The goal is to create a wall that provides multiple building-performance benefits while reducing unnecessary complexity.

At a Glance

What Owners Should Know

ENERGY

Designed to support high-performing, energy-efficient building envelopes.

COMFORT

The wall system is intended to help maintain more stable interior conditions.

MOISTURE

Hemp-based materials can support vapor-permeable, moisture-managing wall strategies.

DURABILITY

The system is designed around durable mineral- and bio-based materials and appropriate envelope detailing.

HEALTH

Bio-based materials can help reduce reliance on some conventional synthetic building materials while supporting healthier indoor environments.

SUSTAINABILITY

Hemp is a renewable agricultural feedstock that can be used in long-lived building products.

SIMPLICITY

An integrated system can reduce the number of separate wall layers and interfaces requiring coordination.

SECTION 1

Why Use Hemp in a Building?

Industrial hemp produces several useful fibers.

The inner woody portion of the plant, commonly called **hurd or shiv**, can be combined with lime and water to produce hempcrete, a lightweight bio-composite used for walls, floors, and insulation applications. Bio Fiber Industries describes hempcrete as durable, lightweight, and insulating. ([Bio Fiber Industries](#))

Hemp fibers can also be incorporated into other building products and composites.

For an owner, the important point is straightforward:

The plant is the raw material. The building product is an engineered construction material.

That distinction matters.

A Bio Fiber wall should be evaluated based on how the completed assembly performs—not simply on the fact that its feedstock comes from a plant.

SECTION 2

Will the Building Be Energy Efficient?

Plain-Language Answer

The Bio Fiber system is designed to contribute to an energy-efficient building envelope.

Walls affect how quickly heat moves into and out of a building.

A higher-performing wall can help reduce the amount of work required from heating and cooling equipment.

Bio Fiber Industries identifies energy efficiency as a core benefit of its hemp-based construction materials. ([Bio Fiber Industries](#))

Actual building energy performance will still depend on the complete project, including:

- Windows
- Roof
- Air leakage
- Mechanical systems
- Building orientation
- Climate
- Occupant use

No wall material determines building energy use by itself.

What This Means for an Owner

A better-performing envelope can contribute to:

- Improved occupant comfort
- Reduced heating and cooling demand
- More stable interior temperatures
- Potential operating-cost savings
- Greater resilience during temperature extremes

Project-specific energy models and code documentation should be used when quantitative savings are required.

SECTION 3

Will the Building Feel Different?

Potentially.

A building's wall system influences more than the number shown on an insulation label.

The enclosure affects:

- Surface temperatures
- Drafts
- Temperature swings
- Humidity
- Sound
- Occupant comfort

Bio-based wall assemblies can combine insulation with thermal mass and moisture-management characteristics, helping the building respond more gradually to changing exterior conditions.

Simply Put

A high-performing wall is intended to help the inside of the building remain **more stable even when conditions outside change.**

SECTION 4

What About Moisture?

Plain-Language Answer

A well-designed Bio Fiber wall is intended to **manage moisture rather than simply trap it between impermeable layers.**

Many hemp-based materials are compatible with vapor-permeable construction strategies.

That means water vapor can be considered as part of the wall's normal drying behavior.

This does **not** mean the wall can be allowed to leak.

Good construction still requires:

- Proper roofs
 - Flashing
 - Drainage
 - Window detailing
 - Exterior protection
 - Leak repair
-

A Useful Distinction

Water Vapor

Small amounts of moisture that naturally move through or accumulate within building materials.

Bulk Water

Rain, plumbing leaks, roof leaks, and other direct water intrusion.

Bio Fiber's wall strategy may help manage normal moisture movement.

Bulk water still needs to stay out.

SECTION 5

Is It Durable?

Plain-Language Answer

The system is intended for long-term building applications, but durability depends on the same fundamentals that determine the life of conventional buildings:

Good design + Good installation + Good water management + Appropriate maintenance

Bio Fiber describes hempcrete as a durable construction material. ([Bio Fiber Industries](#))

The important owner consideration is not whether a material requires *zero* maintenance.

No building does.

The better question is:

What portions of the building will require routine attention?

What Owners Typically Maintain

Routine envelope maintenance is likely to focus on familiar items such as:

- Sealants
- Windows
- Doors
- Exterior coatings
- Flashing
- Roof transitions
- Penetrations
- Drainage systems

The protected bio-based material inside the wall would not normally be treated as a frequently replaced finish product.

SECTION 6

Is Hemp Construction Safe?

Plain-Language Answer

A hemp-based building system should be evaluated through the same safety and building-code process as other construction materials.

That includes applicable requirements for:

- Fire performance
- Structural performance
- Energy performance
- Moisture management
- Interior finishes
- Building-envelope performance

The important question is not:

"Is hemp safe?"

The useful question is:

"Does the proposed wall assembly have the documentation required for this building?"

Owners should expect the design and construction team to answer that question before installation.

SECTION 7

What About Fire?

This is one of the first questions many owners ask.

And understandably so.

Hemp in a building system is not the same thing as loose, untreated agricultural material.

For example, hempcrete combines hemp hurd with lime and water to create a mineral-bound bio-composite. ([Bio Fiber Industries](#))

For projects requiring specific fire performance, the design team should rely on the applicable testing and documentation for the exact assembly being proposed.

Owner Takeaway

Ask for the fire documentation for the wall assembly—not assumptions about the raw material.

SECTION 8

Is This Experimental?

Plain-Language Answer

Bio-based construction is innovative, but the underlying materials are not simply laboratory concepts.

Bio Fiber Industries currently works with hempcrete, hemp fiber composites, bio-composites, and other hemp-derived advanced materials. Its website describes ongoing work across construction materials and broader advanced-material applications. ([Bio Fiber Industries](#))

The appropriate level of project review depends on the particular product and application.

For an owner, that means separating two ideas:

Innovation

Using newer materials or construction approaches.

Risk

Using a system without appropriate documentation, design, or installation controls.

They are not the same thing.

SECTION 9

Will It Meet Building Codes?

Plain-Language Answer

Code compliance is project-specific.

No wall system is automatically approved for every building, climate, occupancy, or jurisdiction.

The project team evaluates:

- Building type
- Location
- Applicable code
- Wall configuration
- Fire requirements
- Energy requirements
- Structural requirements

The design team then develops the appropriate compliance pathway.

What an Owner Should Expect

Before construction, the project team should be able to identify:

Applicable Code

↓

Proposed Assembly

↓

Required Documentation



Design Review



Permit / Approval Path

That process is normal professional construction practice.

SECTION 10

How Does Bio Fiber Compare With a Conventional Wall?

A conventional wall may rely on several independent products to perform different functions.

For example:

Framing



Sheathing



Insulation



Air / Moisture Control



Continuous Insulation



Interior Finish



Exterior Finish

The Bio Fiber approach seeks to coordinate more of these functions within a unified wall strategy.

Why Owners Should Care

Every additional product can create another:

- Specification
- Purchase
- Delivery
- Installer
- Schedule dependency
- Interface
- Inspection requirement

Reducing unnecessary complexity can potentially make a building easier to coordinate and more consistent to construct.

Simply Put

A simpler wall can mean fewer places for project coordination to go wrong.

That does not eliminate the need for skilled installation or quality control.

SECTION 11

Is Bio Fiber Better for Occupants?

Bio Fiber Industries describes its hemp and bio-based building materials as sustainable, energy-efficient alternatives intended for modern construction and for the people who live and work in those environments. ([Bio Fiber Industries](#))

Potential occupant-focused benefits of well-designed bio-based envelopes can include:

- More stable indoor temperatures
- Moisture-management strategies
- Reduced reliance on certain synthetic materials
- Comfortable interior environments
- Acoustic benefits depending on assembly
- Greater connection to natural-material construction

Specific indoor-air-quality or emissions claims should be supported by the applicable product testing.

SECTION 12

What About Sustainability?

This is one of the areas where hemp-based materials differ most clearly from conventional building materials.

Hemp is an agricultural feedstock.

That means the raw material can be grown again rather than extracted from a finite mineral or petroleum resource.

Bio Fiber Industries also develops hemp-based composites and other advanced materials as alternatives to conventional materials across multiple industries. ([Bio Fiber Industries](#))

For Owners & Stakeholders, Sustainability Can Mean:

MATERIALS

Increasing use of renewable feedstocks.

SUPPLY CHAIN

Supporting domestic agricultural and manufacturing opportunities.

ENERGY

Improving operational building performance.

CARBON

Evaluating lower-impact and potentially carbon-storing material strategies.

HEALTH

Considering the effect of material choices on people as well as buildings.

SECTION 13

Does Sustainable Mean More Expensive?

Not necessarily—and the comparison should be made carefully.

Comparing one Bio Fiber component against one conventional insulation product may not provide a meaningful picture of project cost.

Owners should evaluate:

Initial Material Cost

plus

Installation Cost

plus

Number of Trades

plus

Schedule

plus

Energy Performance

plus

Maintenance

plus

Lifecycle Value

The Better Question

Instead of asking:

"What does the material cost?"

Ask:

"What does the completed wall cost to build, operate, and maintain?"

That is a more useful ownership question.

SECTION 14

What Should Lenders and Investors Know?

Lenders and financial stakeholders often evaluate unfamiliar materials through the lens of risk.

Useful questions include:

- Is the system part of an approved design?
- Is technical documentation available?
- Has the project team identified a code pathway?
- Are installation responsibilities defined?
- Is quality control included?
- Are maintenance requirements understood?
- Is the material being used within its intended application?

A new material does not automatically create unacceptable financial risk.

Unmanaged design and construction uncertainty creates risk.

SECTION 15

What Should Developers Know?

Developers should evaluate Bio Fiber through several lenses simultaneously:

PROJECT COST

How does the complete installed assembly compare?

SCHEDULE

Can system integration reduce coordination or installation steps?

MARKETABILITY

Do healthier materials and high-performance construction create value for tenants or buyers?

OPERATING COSTS

Can better envelope performance support lower energy demand?

ESG / SUSTAINABILITY

Does the system support project sustainability goals?

REPEATABILITY

Can the assembly be applied consistently across multiple units or projects?

SECTION 16

Will This Work for Multifamily & Commercial Projects?

Bio Fiber Industries states that it works with architects, designers, engineers, and builders on both residential and commercial projects. ([Bio Fiber Industries](#))

Potential project categories include:

- Multifamily housing
- Affordable housing
- Mixed-use development
- Offices
- Education
- Hospitality
- Civic facilities
- Commercial buildings
- Residential construction
- Renovation and retrofit

Each application should be reviewed against its own structural, fire, energy, acoustic, and permitting requirements.

SECTION 17

Will It Work in Our Climate?

There is no single wall assembly that should be copied unchanged into every climate.

The wall should be designed for:

- Local temperature
- Humidity
- Rain exposure
- Heating demand
- Cooling demand
- Drying conditions
- Applicable energy code

Owner Takeaway

Climate affects the design of the wall—not whether good building science matters.

SECTION 18

What Happens If Something Changes During Construction?

Field changes happen.

A mechanical penetration moves.

An opening changes.

Existing construction differs from the drawings.

A contractor proposes a substitute.

The important issue is how the team responds.

The Bio Fiber Field Process

STOP

↓

DOCUMENT

↓

VERIFY THE DESIGN

↓

REVIEW SYSTEM IMPACT



APPROVE THE SOLUTION



CONTINUE

This helps prevent an apparently small modification from unintentionally affecting thermal, moisture, structural, fire, or finish performance.

SECTION 19

What Should Owners Ask the Project Team?

You do not need to become the project's technical expert.

You do need to know that the technical questions have been answered.

Ask:

- 1. What exact wall assembly are we using?**
- 2. What performance documentation supports it?**
- 3. How are energy-code requirements being addressed?**
- 4. How are moisture and water managed?**
- 5. What fire documentation applies?**
- 6. Who is responsible for installation quality control?**
- 7. What inspections occur before the wall is covered?**

8. What maintenance does the owner need to understand?

9. Who do we contact if modifications are needed later?

Clear answers to these questions should provide considerably more confidence than simply reading a product specification.

SECTION 20

The Bio Fiber Performance Summary

In Plain Language

IT INSULATES

Helping reduce unwanted heat transfer through the building envelope.

IT MANAGES MOISTURE

Supporting wall assemblies designed around appropriate vapor movement and drying.

IT SUPPORTS COMFORT

Helping the enclosure maintain more stable indoor conditions.

IT IS BIO-BASED

Using hemp-derived material as part of the building system.

IT CAN SIMPLIFY THE WALL

Integrating multiple performance objectives into a coordinated assembly.

IT IS DESIGNED FOR REAL BUILDINGS

Including residential and commercial construction applications. ([Bio Fiber Industries](#))

IT STILL REQUIRES GOOD DESIGN

Like every serious construction system.

What Bio Fiber Does Not Replace

Bio Fiber does not replace:

- Architects
- Engineers
- Energy-code analysis
- Fire-safety requirements
- Good flashing
- Quality installation
- Proper maintenance
- Building inspections

It is a building system intended to work **within professional design and construction practice.**

The Bottom Line

For an owner or stakeholder, the Bio Fiber decision does not need to begin with the chemistry of hemp fiber or a detailed specification table.

It can begin with five questions:

Does it perform?

Designed for high-performance building-envelope applications.

Is it practical?

Designed for integration into residential and commercial construction.

Is it durable?

Intended for long-term building applications when properly designed and maintained.

Is it responsible?

Built around renewable, bio-based material strategies.

Can my project team document it?

That is the question that should be answered for every specific project before construction begins.

Related Bio Fiber Resources

Construction System Overview

Understand the complete system, its components, applications, and performance objectives.

Energy Code Compliance Guide

For architects, engineers, and project teams needing more detailed envelope and compliance guidance.

Bio Fiber System Installation Guide

Step-by-step field guidance for contractors and installers.

Common Questions About Bio Fiber Answered

More detailed responses covering fire safety, climate, durability, code compliance, and long-term performance.

Trade Coordination Overview

Guidance for project managers and superintendents coordinating construction teams.

Ready to Learn More?

If the Bio Fiber system is being considered for your project, the next step is a project-specific conversation.

Bio Fiber Industries works with architects, builders, designers, engineers, and project stakeholders on residential and commercial applications. ([Bio Fiber Industries](#))

Ask About:

- Project-fit review
- System options
- Technical documentation
- Energy performance
- Material samples
- Cost evaluation
- Construction planning
- Owner and stakeholder presentations

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Important Note

This document is intended to explain the Bio Fiber system in accessible language for non-technical stakeholders. It is not a product specification, engineering report, code-compliance determination, warranty statement, or substitute for project-specific professional advice.

Specific thermal, fire, structural, moisture, indoor-air-quality, carbon, durability, cost, and other performance claims should be based on the documentation applicable to the particular Bio Fiber product and wall assembly proposed for the project.

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