

TECHNICAL PUBLICATION SERIES

COMMON QUESTIONS ABOUT BIO FIBER ANSWERED

Direct Answers for Architects, Builders,
Developers, Owners & Project Teams



SUSTAINABLE
MATERIALS



ENERGY
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FIRE
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ACOUSTIC
COMFORT



DURABILITY
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**BIO FIBER
INDUSTRIES™**

NATURAL MATERIALS USED WISELY™

Technical Publication Series

Common Questions About Bio Fiber Answered

Direct Answers for Architects, Builders, Developers, Owners & Project Teams

Bio Fiber Industries™
Natural Materials Used Wisely™

About This Guide

Bio-based construction is moving from a niche idea into a serious building-system discussion.

As more architects, builders, developers, owners, and public agencies evaluate bio fiber materials like hemp, the same practical questions come up repeatedly:

Is it fire safe?

Does it meet code?

How does it compare with conventional insulation?

Will it last?

Does it work in wet or cold climates?

What happens if something needs to change in the field?

These are the right questions to ask.

This guide provides direct, practical answers to the questions professionals and owners raise most often when evaluating the Bio Fiber Construction System.

It is intended to help project teams understand where Bio Fiber fits, what should be verified during design, and how the system should be evaluated alongside more conventional wall assemblies.

The goal is not to make hemp-based construction seem unfamiliar.

The goal is to evaluate it using the same performance questions applied to every serious building system.

Quick Answer

What is the Bio Fiber Construction System?

The Bio Fiber Construction System is an integrated wall approach using bio-based fiber components designed to work together as part of a coordinated building envelope.

Depending on the project configuration, the system may include:

- Bio Fiber wall panels
- Bio Fiber blocks
- Bio-based insulation
- Compatible finish systems
- Supporting framing and connection components

The system is intended to support thermal performance, moisture management, healthy indoor environments, and simplified wall assembly coordination.

SECTION 1

Is Hemp-Based Construction Fire Safe?

Short Answer

Hemp-based construction can be used safely when incorporated into properly designed and documented wall assemblies.

The presence of hemp fiber does not automatically make a wall behave like exposed plant material.

In many hemp-based building systems, the fiber is combined with mineral-based binders or incorporated into assemblies designed to meet fire-performance requirements.

What matters is the performance of the **tested or approved assembly**, not simply the origin of the raw material.

What Professionals Should Ask

Instead of asking:

"Does hemp burn?"

Ask:

"What is the fire performance of the complete wall assembly?"

Project teams should review applicable:

- Flame-spread testing
 - Smoke-development testing
 - Fire-resistance ratings
 - Assembly-specific documentation
 - Applicable code requirements
-

Why the Distinction Matters

A building code evaluates construction systems based on how they perform in defined conditions.

Wood framing is combustible.

Paper-faced gypsum contains combustible material.

Many synthetic insulation products are derived from petroleum.

Yet all can be safely used when installed within approved assemblies.

Bio-based materials should be evaluated the same way.

Project Team Takeaway

Fire safety is an assembly question—not a raw-material assumption.

For fire-rated conditions, always rely on the specific documentation associated with the proposed Bio Fiber assembly.

SECTION 2

Does the Bio Fiber System Meet Building Codes?

Short Answer - YES

Code compliance is determined by the complete project, assembly configuration, adopted code, and Authority Having Jurisdiction.

No building product should be treated as automatically "code compliant" in every application.

The proper question is whether the proposed Bio Fiber assembly can satisfy the requirements applicable to the specific project.

What May Need to Be Evaluated?

Depending on building type and jurisdiction:

- Structural requirements
- Fire performance
- Energy-code requirements
- Thermal resistance
- Assembly U-factor
- Air leakage
- Moisture control
- Exterior wall requirements
- Interior finish requirements

- Applicable material standards
-

Bio Fiber & Modern Energy Codes

The Bio Fiber system is particularly relevant to modern energy-code discussions because current codes increasingly emphasize:

- Whole-wall performance
- Reduced thermal bridging
- Continuous insulation
- Air-management continuity
- Energy-efficient envelopes

This systems-based approach aligns with Bio Fiber's broader philosophy of integrating multiple wall functions rather than simply adding individual products to a conventional assembly.

Washington State Projects

Washington's energy-code framework places substantial emphasis on high-performance building envelopes and thermal continuity.

Where continuous insulation is part of the selected compliance pathway, the project team should confirm how the Bio Fiber assembly contributes to:

- Continuous thermal performance
- Assembly U-factor
- Reduced thermal bridging
- Whole-envelope compliance

Project-specific calculations and approved documentation remain essential.

Project Team Takeaway

Bio Fiber should be evaluated as an assembly—not as a standalone material looking for an exception.

SECTION 3

How Does Bio Fiber Compare to Conventional Insulation?

Short Answer

Bio Fiber is intended to offer more than nominal insulation value.

Its value proposition is based on **integrated wall performance**.

Conventional Insulation Typically Focuses On:

- R-value
 - Installed thickness
 - Cost per square foot
 - Familiarity
 - Availability
-

Bio Fiber Adds Broader Building-Envelope Considerations:

- Thermal resistance
- Thermal mass
- Vapor permeability
- Moisture buffering
- Acoustic performance
- Reduced material complexity
- Bio-based material content
- Domestic supply-chain potential

Comparison Overview

Consideration	Conventional Insulation	Bio Fiber Approach
Thermal resistance	Yes	Yes
Continuous thermal strategy	Requires separate detailing in many assemblies	Can be designed as part of integrated system
Vapor permeability	Product dependent	Core design consideration
Moisture buffering	Limited in many synthetic products	Bio-based materials can support hygroscopic behavior
Thermal mass	Generally limited	Can contribute depending on assembly
Acoustic performance	Product dependent	Potential secondary benefit
Assembly integration	Usually one component	Designed as coordinated system
Renewable feedstock	Often no	Yes
Domestic agricultural supply opportunity	Limited	Significant potential

What This Means for the Project

The Bio Fiber decision should not be reduced to:

"Which insulation has the highest R-value per inch?"

A better evaluation considers:

"Which wall assembly delivers the performance, constructability, durability, and project outcomes we need?"

SECTION 4

What Does Long-Term Maintenance Look Like?

Short Answer

A properly designed Bio Fiber wall system should generally be treated like other durable building-envelope systems: maintain the finishes, protect the assembly from uncontrolled water intrusion, and address building-envelope problems when they occur.

What Usually Requires Maintenance?

The bio-based core of a wall is not typically a routine maintenance item.

More common maintenance locations include:

- Exterior finishes
- Sealants
- Flashing
- Windows
- Doors
- Roof transitions
- Exterior penetrations
- Drainage components

These are the same areas that require attention in conventional buildings.

What Should Owners Monitor?

Exterior Conditions

Look for:

- Cracking

- Failed sealants
- Water staining
- Damaged flashing
- Drainage problems

Interior Conditions

Investigate:

- Persistent dampness
 - Unusual staining
 - Repeated condensation
 - Odors associated with moisture problems
-

Moisture Management

Bio-based wall systems are often designed to manage moisture through vapor-permeable construction.

That does **not** mean they are designed to tolerate uncontrolled water intrusion indefinitely.

Bulk water management still matters.

Project Team Takeaway

A vapor-open wall is designed to manage moisture—not ignore water.

Good roofs, flashing, drainage, and detailing remain essential.

SECTION 5

Will Bio Fiber Work in My Climate?

Short Answer

Potentially yes—but the assembly should be designed for the climate and project conditions.

Building envelopes behave differently in:

- Cold climates
- Hot climates
- Marine climates
- Mixed climates
- Hot-humid climates
- Dry climates

The same wall detail should not automatically be used everywhere.

Climate-Specific Questions

Project teams should evaluate:

Temperature

What are the heating and cooling demands?

Humidity

What direction will vapor typically move?

Rain Exposure

How will bulk water be managed?

Drying Potential

Can the assembly dry appropriately when moisture enters?

Energy Code

What thermal performance is required?

Pacific Northwest Relevance

The Pacific Northwest's combination of cool temperatures, seasonal rainfall, and varying humidity makes moisture management and drying potential especially important.

Vapor-permeable assemblies may offer meaningful advantages when properly designed because they can support moisture movement rather than relying exclusively on impermeable barriers.

Cold Climates

Key issues include:

- Thermal continuity
 - Condensation risk
 - Exterior insulation
 - Air leakage control
-

Hot-Humid Climates

Key issues may include:

- Vapor direction
 - Exterior moisture exposure
 - Cooling loads
 - Finish compatibility
-

Dry Climates

Priorities may shift more toward:

- Thermal mass
 - Temperature swings
 - Solar exposure
 - Energy performance
-

Project Team Takeaway

Climate does not determine whether Bio Fiber works. Climate determines how the assembly should be designed.

SECTION 6

What Happens If I Need to Make Field Modifications?

Short Answer

Field modifications are possible in many construction systems, but they should be controlled.

Do not assume that because Bio Fiber is bio-based it can simply be cut, patched, or modified without considering the complete wall assembly.

When Conditions Change

Use this process:

1. STOP

Do not immediately modify the assembly.

2. VERIFY

Confirm the actual condition against the drawings.

3. DOCUMENT

Take photographs and field dimensions.

4. EVALUATE

Determine whether the change affects:

- Structure
- Fire performance
- Thermal continuity
- Moisture management
- Air management
- Finish support

5. COORDINATE

Obtain the appropriate project direction.

6. PROCEED

Make the modification using an approved method.

Common Field Changes

Examples include:

- New mechanical penetration
 - Relocated electrical box
 - Different rough opening
 - Structural framing conflict
 - Unexpected retrofit condition
 - Product substitution
 - Finish change
-

Field Rule

If the modification changes the system, treat it as a system decision.

SECTION 7

Is Hemp-Based Construction Durable?

Short Answer

Durability depends on good material selection, good assembly design, and good water management.

Hemp-based materials have a long history of use in construction, but modern Bio Fiber applications should be evaluated using modern building-science criteria.

Factors That Influence Durability

- Moisture exposure
 - Finish protection
 - Drying capacity
 - Structural movement
 - Installation quality
 - Material compatibility
 - Environmental exposure
-

What Bio Fiber Is Designed to Avoid

The system philosophy seeks to reduce conditions associated with premature wall failure, including:

- Trapped moisture
 - Incompatible layers
 - Excessive thermal bridging
 - Poorly coordinated interfaces
-

Long-Term Perspective

A durable wall should:

Manage heat



Manage air



Manage moisture



Protect materials



Allow appropriate drying

Bio Fiber's integrated approach is designed around those building-envelope principles.

SECTION 8

Is Bio Fiber More Expensive?

Short Answer

A meaningful cost comparison should evaluate the **complete installed wall**, not just one material.

Comparing the price of Bio Fiber against a batt of fiberglass or a sheet of rigid foam does not capture the total construction system.

Conventional Cost Stack

A traditional high-performance wall may require:

- Framing
- Sheathing
- Cavity insulation
- Air barrier
- Vapor-control layer
- Continuous insulation
- Finish substrate
- Additional attachment
- Multiple labor scopes

Each component adds:

Material cost + Labor + Scheduling + Coordination + Inspection

Integrated-System Comparison

The Bio Fiber approach is intended to consolidate functions.

Potential project value may come from:

- Fewer material layers
 - Reduced trade interfaces
 - Simplified sequencing
 - Reduced coordination
 - Lower thermal-bridge risk
 - Potential lifecycle benefits
-

The Right Cost Question

Instead of:

"What does this material cost?"

Ask:

"What does the complete installed wall cost—and what does it cost to own?"

SECTION 9

Does Bio Fiber Require Specialized Labor?

Short Answer

Installation requirements depend on the system configuration, but project teams should plan for installer orientation and appropriate field coordination.

Bio Fiber is intended to integrate into professional construction workflows rather than require an entirely separate construction industry.

Helpful Practices

- Pre-installation meeting
 - First-installation mockup
 - Installer orientation
 - Approved details on site
 - Clearly assigned inspection points
 - Bio Fiber technical support where appropriate
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SECTION 10

What About Mold?

Short Answer

Mold growth is fundamentally a moisture-management problem.

No responsible wall-system provider should claim that a building material makes poor water management irrelevant.

Bio-based assemblies can support moisture buffering and vapor movement, but bulk water still needs to be controlled.

The Best Mold Strategy

Keep bulk water out



Limit condensation



Allow appropriate drying



Use compatible materials



Inspect leaks quickly

SECTION 11

Does Bio Fiber Off-Gas?

Bio Fiber's use of bio-based materials and mineral-compatible construction is intended to support healthier indoor environments and reduce reliance on materials associated with higher VOC emissions.

Actual emissions claims should always be supported by the applicable product-specific testing documentation.

SECTION 12

Can Bio Fiber Be Used in Commercial & Multifamily Buildings?

Short Answer

Yes, depending on the approved project configuration.

Potential applications include:

- Commercial offices
- Multifamily housing
- Affordable housing
- Hospitality
- Education
- Civic buildings
- Mixed-use
- Industrial applications
- Retrofit projects

Commercial and multifamily applications require careful attention to:

- Fire performance
 - Energy code
 - Structural requirements
 - Acoustics
 - Repetition
 - Constructability
 - Inspection
 - Documentation
-

SECTION 13

Is Bio Fiber Only for New Construction?

No.

Bio Fiber materials may also be relevant to retrofit and renovation projects.

Potential retrofit applications include:

- Thermal upgrades
- Existing wall infill
- Building-envelope rehabilitation
- Historic structures where vapor permeability is valuable
- Commercial energy retrofits
- Adaptive reuse

Existing conditions should be documented before the assembly is selected.

SECTION 14

What Documentation Should I Request?

For serious project evaluation, ask for the documentation relevant to the proposed assembly.

This may include:

- Product specifications
 - Assembly details
 - Installation guidance
 - Thermal data
 - Fire-performance information
 - Finish requirements
 - Material safety documentation
 - Applicable testing
 - Project-specific technical review
-

SECTION 15

Who Should Be Involved in the Decision?

Depending on project complexity:

- Architect
- Structural engineer
- Mechanical engineer
- Energy consultant
- Envelope consultant
- General contractor
- Developer
- Owner
- Code official
- Bio Fiber technical team

Early coordination generally produces a more efficient design process than attempting to substitute a new wall system late in construction documents.

Common Question Quick Reference

Fire Safe?

Evaluate the complete assembly and applicable fire testing.

Code Compliant?

Verify the project-specific compliance pathway and AHJ requirements.

Better Than Conventional Insulation?

Evaluate whole-wall performance, not insulation alone.

Durable?

Yes when properly designed, detailed, installed, and protected from uncontrolled moisture.

Works in My Climate?

Design the assembly for the climate rather than using one universal detail.

Field Modification?

Stop, verify, document, coordinate, then modify using an approved solution.

More Expensive?

Compare complete installed-wall cost and lifecycle value—not individual product price.

Seven Questions to Ask Before Specifying Any Wall System

- 1. What is the whole-wall thermal performance?**
- 2. How is thermal bridging addressed?**
- 3. How does the assembly manage moisture?**
- 4. What fire documentation is available?**
- 5. How many trades and interfaces are required?**
- 6. What happens at windows, penetrations, and transitions?**
- 7. What technical support is available during construction?**

If a wall system cannot answer these questions clearly, the project team should keep asking.

Related Bio Fiber Resources

Construction System Overview

A complete introduction to the Bio Fiber Construction System.

Is the Bio Fiber System Right for Your Project?

Project-evaluation guidance for design and construction professionals.

Energy Code Compliance Guide

Guidance related to IECC, Washington State Energy Code, continuous insulation, and whole-assembly energy performance.

Bio Fiber System Installation Guide

Detailed field guidance from material receiving through final finish.

Trade Coordination Overview

Sequencing, trade handoffs, inspection points, and project coordination.

Installation FAQ

Field answers covering handling, fastening, moisture, finishes, penetrations, and unexpected conditions.

More Answers for Your Questions

Every project is different.

Bio Fiber Industries works with architects, engineers, contractors, developers, owners, and public agencies to evaluate proposed applications and identify the technical information required for informed project decisions.

Talk With the Bio Fiber Team

Available support may include:

- Project-fit review
- Assembly guidance
- Technical documentation
- Material samples
- Energy-code discussions
- Installation planning
- Finish compatibility
- Design-team coordination

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Technical Disclaimer

This guide is intended for general educational and project-evaluation purposes. It does not replace approved construction documents, engineering calculations, product-specific testing, project specifications, applicable codes, professional design services, or requirements established by the Authority Having Jurisdiction.

Fire performance, structural requirements, thermal characteristics, moisture behavior, code compliance, installation requirements, and other system characteristics should be verified for the specific Bio Fiber product and project assembly being proposed.

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