SECTION 07 21 00

WOOD FIBER INSULATION

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\*\* NOTE TO SPECIFIER \*\* TimberHP; wood fiber board, batt and loose-fill insulation products.
This section is based on the products of TimberHP, which is located at:
1 Main St. P. O. Box 119
Madison, ME 04950
Toll Free Tel: 855-755-1359
Email: [request info (info@timberhp.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=TimberHP&coid=53864&rep=&fax=&message=RE:%20Spec%20Question%20(07214tim):%20%20&mf=)
Web: <https://timberhp.com>
 [ [Click Here](https://www.arcat.com/arcatcos/cos53/arc53864.html) ] for additional information.
TimberHP(AKA GO Lab, Inc.) is a privately held, Maine-based building products corporation, founded in 2017, to develop and manufacture wood fiber insulation for the residential and light commercial construction markets. Wood fiber board, batt, blown-in high-performance insulation products are vapor open, renewable, recyclable, nontoxic, carbon storing and, when manufactured here in America, cost competitive with other popular insulation products.
In 2023, TimberHP is the first company to make wood fiber (dry process) insulation in North America at its manufacturing facility in Madison, Maine.
Sustainability: TimberHP's sustainability objectives include circular economy adapted products and solid waste recycling, sustainable water and wastewater management, environmentally sustainable management of natural resources, renewable energy, climate change mitigation, pollution prevention and control, energy efficiency and green buildings.
Greater than 85% of wood used to manufacture TimberHP's products comes from operations that are dually Chain of Custody (COC) certified by the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative. In 2023, TimberHP began the process of establishing its own FSC/SFI certifications and has committed itself to 100% of its products being 3rd party certified by the end of 2024. Verified Environmental Product Declarations will be released after 18 months of TimberFill, TimberBatt, and TimberBoard production.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Section Includes:
			1. Wood fiber board insulation. (TimberBoard)
			2. Wood fiber batt insulation. (TimberBatt)
			3. Wood fiber blown-in insulation. (TimberFill)
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
		2. Section 05 40 00 - Cold-Formed Metal Framing.
		3. Section 06 10 00 - Rough Carpentry.
		4. Section 06 16 00 - Sheathing.
		5. Section 07 27 00 - Air Barriers.
		6. Section 07 60 00 - Flashing and Sheet Metal.
	1. REFERENCES
		1. ASTM International (ASTM):
			1. ASTM C 208 - Standard Specification for Cellulosic Fiber Insulating Board.
			2. ASTM C 209 - Standard Test Methods for Cellulosic Fiber Insulating Board.
			3. ASTM C 739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation.
			4. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
		2. Code of Federal Regulations (CFR)
			1. CFR 16 Part 1209 Interim Safety Standard for Cellulose Insulation.
		3. Forest Stewardship Council (FSC)
			1. STD-40-003 Standard for Multi-site Certification of Chain of Custody Operations.
			2. STD-40-004 V2.0 FSC Standard for Chain of Custody Certification.
			3. STD-40-005 V2.1 Standard for Company Evaluation of FSC Controlled Wood.
	2. SUBMITTALS
		1. Submit under provisions of Section 01 30 00.
		2. Product Data:
			1. Manufacturer's data sheets on each product to be used.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Typical installation methods.
		3. Sustainable Design Submittals: Manufacturer's documentation that wood fiber is FSC certified by the Forest Stewardship Council Standards STD-40-003, STD-40-004, STD-40-005.
		4. Verification Samples: Two representative units of each type.
	3. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Company specializing in manufacturing wood fiber products specified in this section, with products meeting CFR and ASTM Standard. Company shall have an established quality control program ensures raw material, individual manufacturing steps, and final product testing meet quality control standards to manufacturer a reliable and consistent product.
		2. Installer Qualifications: Minimum two years experience installing insulation.
		3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
		4. Acoustic Performance: STC and OITC assembly ratings as published by TimberHP and as documented by Riverbank Acoustical Laboratories based on assembly, assembly as applicable to the project.
			1. STC 32, OITC 27, RAL TL23-014: 2x4 Wood Studs, 16" o.c. TimberFill, Single Layer Of 5/8" Type X Gypsum Board on Both Sides
			2. STC 36, OITC 28, RAL TL23-016: 2x6 Wood Studs, 16" o.c. TimberBatt, Single Layer Of 5/8" Type X Gypsum Board on Both Sides
			3. STC 37, OITC 27, RAL TL23-011: 2x4 Wood Studs 16" o.c., TimberBatt, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			4. STC 38, OITC 28, RAL TL23-018: 2x6 Wood Studs, 16" o.c. TimberFill, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			5. STC 46, OITC 30, RAL TL23-008: Single Layer Of 5/8" Type X Gypsum Board on Both Sides, 3-5/8" Metal Studs 16" o.c. TimberBatt acoustic, Single Layer of 5/8" Type X Gypsum Board on Both Sides.
			6. STC 49, OITC 30, RAL TL23-010: 3-5/8" Metal Studs 24" o.c. TimberBatt acoustic, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			7. STC 50, OITC 31, RAL TL23-012: 2x4 Wood Studs, 16" o.c. TimberBatt, RCSD on Source Side, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			8. STC 50, OITC 32, RAL TL23-013: 2x4 Wood Studs, 16" o.c. TimberFill, RCSD on Source Side, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			9. STC 53, OITC 32, RAL TL23-009: 3-5/8" Metal Studs 24" o.c. TimberBatt acoustic, RCSD on Source Side, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			10. STC 53, OITC 34, RAL TL23-007: 3-5/8" Metal Studs 16" o.c. TimberBatt acoustic, RCSD on Source Side,
			11. STC 53, OITC 38, RAL TL23-017.2x6 Wood Studs, 16" o.c. TimberFill, RCSD on source side, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.
			12. STC 55, OITC 37, RAL TL23-015: 2x6 Wood Studs, 16" o.c. TimberBatt, RCSD on Source Side, Single Layer Of 5/8" Type X Gypsum Board on Both Sides.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct an in-place mock-up of the exterior wall with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect.
			1. Intent of mock-up is to demonstrate quality of workmanship and relationship between different materials.
			2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
	1. PRE-INSTALLATION CONFERENCE
		1. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate conditions and insulation manufacturer's installation instructions.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store and handle products per manufacturer's instructions until ready for installation.
	3. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
	4. WARRANTY
		1. Insulation Warranty: At project closeout, submit to Owner an executed copy of the manufacturer's standard limited warranty against manufacturing defects.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: TimberHP, which is located at: 1 Main St. P. O. Box 119; Madison, ME 04950; Toll Free Tel: 855-755-1359; Email: [request info (info@timberhp.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=TimberHP&coid=53864&rep=&fax=&message=RE:%20Spec%20Question%20(07214tim):%20%20&mf=); Web: <https://timberhp.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

\*\* NOTE TO SPECIFIER \*\* TimberBoard excels as a vapor open, continuous insulation (CI) with a stable R-value, high heat capacity, and high compressive strength. A combination of density and low conductivity protects against heat loss in the winter and provides exceptional buffering of summertime heat gain. Wood fiber continuous insulation meets all residential fire standards and offers superior fire protection versus foam-based products. Wood fiber CI prevents the trapping of unwanted moisture within assemblies and offers the compressive strength required for efficient cladding installs. Typical applications include exterior continuous insulation and interior insulation for walls, floors, and ceilings. Delete if not required.

* 1. WOOD FIBER BOARD INSULATION
		1. Wood Fiber Board Insulation: TimberBoard by TimberHP with the following attributes.
			1. Description: Rigid wood continuous insulation.
			2. Contents: Softwood fibers, PMDI (bonding), paraffin (hydrophobic).
			3. Sustainability: FSC-certified softwood.
			4. R-Value: 3.4 to 3.7 per inch.
			5. Vapor Permeability: 44 perm-inch.
			6. Acoustic Performance: NRC 0.85 at 1-1/2 inch (38 mm) thickness (single layer); NRC 0.85 at 3 inch (76 mm) thickness (two layers), and NRC 1.00 at 5-1/2 inches (140 mm) thick (single layer).
			7. Compressive Strength: 10-20 psi.
			8. Fire Protection: ASTM E84 Class B flame spread and smoke developed without additional flame retardants.
			9. Standards: Meets modified ASTM C208 and C209 Standard Test Method for Cellulosic Fiber Insulating Board.

\*\* NOTE TO SPECIFIER \*\* Delete edge profile if not required.

* + - 1. Edge Profile: Tongue and groove. (July 2024)
			2. Edge Profile: Square edge.

\*\* NOTE TO SPECIFIER \*\* Delete board thicknesses not required.

* + - 1. Board Thickness and R-Value: 1 inch (25.4mm), R3.6.
			2. Board Thickness and R-Value: 1.5 inches (38.1mm), R5+.
			3. Board Thickness and R-Value: 2 inches (50.8mm), R7.
			4. Board Thickness and R-Value: 2.5 inches (63.5mm), R9.
			5. Board Thickness and R-Value: 3.5 inches (88.9mm), R13.
			6. Board Thickness and R-Value: 4 inches (101.6mm), R15.
			7. Board Thickness and R-Value: 5.5 inches (139.7mm), R20.
			8. Board Thickness and R-Value: 7.25 inches (184.15mm, R26.
			9. Board Thickness and R-Value: 9.25 inches (234.95mm), R34.

\*\* NOTE TO SPECIFIER \*\* TimberBatt is a flexible, press-fit cavity insulation composed of refined wood fiber with added binders and flame retardant. Its dense, high R-value per inch helps achieve Grade I installations. It outperforms other batt products as a safe, convenient, thermal and acoustic solution. TimberBatt can increase room comfort by buffering and managing indoor humidity as well as unwanted moisture accumulation within walls. Typical installations include thermal cavity insulation and acoustic insulation for interior spaces and demising walls. Delete if not required.

* 1. WOOD FIBER BATT INSULATION
		1. Wood Fiber Batt Insulation: TimberBatt by TimberHP with the following attributes.
			1. Description: Press-fit batt insulation for wood frame and steel stud cavities.
			2. Contents: Wood fibers, polyamide fibers, boric acid.
			3. Sustainability: FSC-certified softwood.
			4. R-Value: 4.0 per inch.
			5. Vapor Permeability: 46 perm-inch.
			6. Acoustic Performance: NRC 1.15 at 5-1/2 inches (140 mm) thick.
			7. Fire Protection: ASTM E84 Class A flame spread and smoke developed.
			8. Standards: Meets applicable ASTM C739 requirements - Standard Specification for Cellulosic Fiber-Fill Thermal Insulation.

\*\* NOTE TO SPECIFIER \*\* Delete wall R-values not required.

* + - 1. Wall Batt R-Value: R-12, 3 inches (76.2mm) thickness.
			2. Wall Batt R-Value: R-14, 3.5 inches (88.9mm) thickness.
			3. Wall Batt R-Value: R-22, 5.5 inches (139.7mm) thickness.
			4. Wall Batt R-Value: R-24, 6 inches (152.4mm) thickness.
			5. Wall Batt R-Value: R-30, 7.25 inches (184.15mm) thickness.

\*\* NOTE TO SPECIFIER \*\* Delete the two following paragraphs if no wood studs.

* + - 1. Wall Batt Width, Wood Studs: 15 inches (381mm) and 23 inches (584.2mm).
			2. Wall Batt Length, Wood Studs: 47 inches (1193.8mm).

\*\* NOTE TO SPECIFIER \*\* Delete attic R-values not required.

* + - 1. Attic Batt R-Value: R-13, Initial thickness 3.8 inches (96.5mm), settled thickness 3.4 inches (86.4mm).
			2. Attic Batt R-Value: R-19, Initial thickness 5.6 inches (142.2mm), settled thickness 5.0 inches (127.0mm).
			3. Attic Batt R-Value: R-22, Initial thickness 6.4 inches (162.5mm), settled thickness 5.8 inches (147.3mm).
			4. Attic Batt R-Value: R-26, Initial thickness 7.6 inches (193mm), settled thickness 6.8 inches (172.7mm).
			5. Attic Batt R-Value: R-30, Initial thickness 8.8 inches (223.5mm), settled thickness 7.9 inches (200.6mm).
			6. Attic Batt R-Value: R-32, Initial thickness 9.3 inches (236.2mm), settled thickness 8.4 inches (213.3mm).
			7. Attic Batt R-Value: R-38, Initial thickness 11.1 inches (281.9mm), settled thickness 10.0 inches (254.0mm).
			8. Attic Batt R-Value: R-40, Initial thickness 11.7 inches (297.2mm), settled thickness 10.5 inches (266.7mm).
			9. Attic Batt R-Value: R-44, Initial thickness 12.9 inches (327.6mm), settled thickness 11.6 inches (294.6mm).
			10. Attic Batt R-Value: R-48, Initial thickness 14.0 inches (355.6mm), settled thickness 12.6 inches (320.0mm).
			11. Attic Batt R-Value: R-49, Initial thickness 14.3 inches (363.2mm), settled thickness 12.9 inches (327.6mm).
			12. Attic Batt R-Value: R-50, Initial thickness 18.0 inches (457mm), settled thickness 16.2 inches (411.5mm).

\*\* NOTE TO SPECIFIER \*\* Delete the following two paragraphs if no metal studs.

* + - 1. Batt Width, Steel Studs: 16 inches (406.4mm) and 24 inches (mm).
			2. Batt Length, Steel Studs: 48 inches (609.6mm).

\*\* NOTE TO SPECIFIER \*\* TimberFill offers exceptional and debris-free installs contractors appreciate, using the same machines and methods familiar to all fiber applications. Attic applications resist wind washing, and full-fill wall applications eliminate convective loops. Closed cavity applications can be installed at lower densities without risk of settling, resulting in cost and time savings, as well as exceptional sound and airflow reductions. Typical applications include dense pack cavity insulation in stud walls and between rafters and joists as well as loose fill blanket insulation for attics. Delete if not required.

* 1. WOOD FIBER BLOWN-IN INSULATION
		1. Wood Fiber Blown-In Insulation: TimberFill by Timber HP with the following attributes.
			1. Description: Wood fiber blown-in insulation. A uniform low-density misture of wood-based cellulosic fibers and borate only fire-retardant chemicals.
			2. Contents: Softwood chips refined into a loose-bodied fiber and blended with borate.
			3. Sustainability: FSC-certified softwood.
			4. R-Value: 3.8 / inch approx.
			5. Acoustic Performance: NRC 1.15 at 5-1/2 inches (140 mm) thick.
			6. Fire Protection: ASTM E84 Class A flame spread and smoke developed.
				1. Flame: Less than 25. Smoke: Less than 450.
			7. Safety Standard: ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation and Code of Federal Regulations (CFR) 16 Part 1209 and 1404 as referenced in IBC Section 720.6 and IRC Section R302.10.3 as applicable.

\*\* NOTE TO SPECIFIER \*\* Delete loose fill application if not required and delete thicknesses not required.

* + - 1. Loose Fill Application: R-Value at 75 degrees F ( degrees C) mean temperature.
				1. R-Value: 11, minimum settled thickness 3.4 inches (86.4 mm).
				2. R-Value: 13, minimum settled thickness 4.0 inches (101.6 mm).
				3. R-Value: 19, minimum settled thickness 5.7 inches (144.8 mm).
				4. R-Value: 22, minimum settled thickness 6.6 inches (167.6 mm).
				5. R-Value: 24, minimum settled thickness 7.2 inches (182.9 mm).
				6. R-Value: 26, minimum settled thickness 7.8 inches (198.1 mm).
				7. R-Value: 30, minimum settled thickness 8.9 inches (226.1 mm).
				8. R-Value: 32, minimum settled thickness 9.5 inches (241.3 mm).
				9. R-Value: 38, minimum settled thickness 11.3 inches (287.0 mm).
				10. R-Value: 40, minimum settled thickness 11.9 inches (302.3 mm).
				11. R-Value: 45, minimum settled thickness 13.4 inches (340.4 mm).
				12. R-Value: 48, minimum settled thickness 14.2 inches (360.7 mm).
				13. R-Value: 49, minimum settled thickness 14.5 inches (368.3 mm).
				14. R-Value: 50, minimum settled thickness 14.8 inches (375.9 mm).
				15. R-Value: 55, minimum settled thickness 16.3 inches (414.0 mm).
				16. R-Value: 60, minimum settled thickness 17.8 inches (452.1 mm).
				17. R-Value: 70, minimum settled thickness 20.7 inches (525.8 mm).

\*\* NOTE TO SPECIFIER \*\* Delete dense pack application if not required and delete framing thicknesses not required.

* + - 1. Dense Pack Application: Density of 3 pounds per cubic foot or greater.
				1. Installed Thickness 2x4 framing, R-13: 3.5 inches (88.9 mm).
				2. Installed Thickness 2x6 framing, R-21: 5.5 inches (139.7 mm).
				3. Installed Thickness 2x8 framing, R-28: 7.25 inches (184.15 mm).
				4. Installed Thickness 2x10 framing, R-35: 9.25 inches (234.95 mm).
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly constructed and prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
	3. INSTALLATION
		1. Install products in accordance with manufacturer's instructions, approved submittals and in proper relationship with adjacent construction.
			1. Install insulation that is dry and undamaged.
			2. Cut and fit insulation tightly around obstructions.
			3. Install continuously, without gaps.
	4. CLEANING AND PROTECTION
		1. Clean products in accordance with the manufacturers recommendations.
		2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION