
TECHNICAL BULLETIN

ICC-ES Format Submittal Document

Certificate of Compliance International Building Code/International Residential Code

Division: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 00 00—Naturally Durable Wood

Tropical Forest Products

6200 Tomken Rd, Mississauga,

ON, L5T1X7 | CA

905-672-8000

www.tropicalforestproducts.com

SUBJECT:

TROPICAL FOREST PRODUCTS brand Timber, Lumber, Decking, Rail, Cladding, and Architectural Millwork Products – Included in Scope. Naturally Durable Wood Species, including but not limited to, Ipe, Garapa, Bulletwood, Red Balau, Cumaru, Itauba, Ekki, Angelim Pedra, Jatoba, Muiricatiara aka Tigerwood, as produced under the Tropical Forest Products brand.

TROPICAL

1.0 SCOPE

1.1 Compliance with the following codes:

- 2015 International Building Code® (IBC) Naturally Durable Wood
- 2015 International Residential Code® (IRC) Naturally Durable Wood
- 2015 International Building Code® (IBC) Fire Resistant Wood
- 2015 International Residential Code® (IRC) Fire Resistant Wood
- 2015 International Building Code® (IBC) Slip Resistance of Hard Surface Floor Materials
- 2015 International Residential Code® (IRC) Slip Resistance of Hard Surface Floor Materials
- 2016 CalFire Wildlife Urban Interface Compliance
- 2008 U.S. Lacey Act "Due Care" Environmental Compliance (Verification of Legal Origin)

Properties evaluated:

- Structural Design Values
- Natural Durability
- Fire Resistance
- Slip Resistance
- Grade and Condition
- Environmental Compliance

Attributes verified:

See Section 3.1

2.0 USES

TROPICAL FOREST PRODUCTS brand Naturally Durable Wood Products that meet the minimum performance standards outlined in this report are suitable for use as (Exterior) Lumber, Deck Boards, Deck Tiles, Timbers, Guard/ Hand Rail, Cladding, Soffit, Rain Screen, Structural Components, Architectural Millwork, and Site Amenities. Note that decisions on compliance in those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

TROPICAL

3.0 DESCRIPTION

3.1 General:

TROPICAL FOREST PRODUCTS brand wood products are 100% organic, containing no chemical treatments or coatings to enhance technical performance, meeting the (IBC/IRC) definition of Naturally Durable Wood, Naturally Fire Resistant Wood, and Slip Resistant Hard Floor Surface.

The attributes of TROPICAL FOREST PRODUCTS brand wood products have been verified as conforming to the provisions of (i) IBC/IRC definition of Naturally Durable Wood as "Durable" Class 2 or higher, meeting the U.S. Forest Products Laboratory definition of "Highly Durable" Class 1. And the British Standards definition of Highly Resistant D70.

3.2 Grade

When graded in accordance with TROPICAL FOREST PRODUCTS Written Grading Rules, the material shall be inspected and certified as compliant with an industry-standard allowable sub-grade factor of a maximum of 5%.

Additional grading notes:

Architectural

- 1. It does not allow pin knots bigger than 1/2" on any face and/or edge
- 2. The maximum permitted slope is 1" in 12"

FEQ:

- 1. It does not allow knots bigger than 3/4" on the narrow face or edges
- 2. It does not allow centerline knots bigger than 1-3/4" on the wide face
- 3. It does not allow edge knots bigger than 3/4" on the wide face
- 4. The maximum permitted slope is 1" in 8"

TROPICAL

- 5. Length of end split and surface split shall be in accordance with ASTM D245 (5.4.3)

COM/ SEL / FAS:

- 1. It does not allow knots bigger than 3/4" on the narrow face or edges
- 2. It does not allow centerline knots bigger than 1-3/4" on the wide face
- 3. It does not allow edge knots bigger than 3/4" on the wide face
- 4. The maximum permitted slope is 1" in 6"
- 5. Length of end split and surface split shall be in accordance with ASTM D245 (5.4.3)

Notes:

- 1. The grader shall classify, measure, and inspect knots, splits, checks, and shakes as Standard ASTM D 245 mandates for dimension lumber and beams & stringers. 2. Use allowable values in conjunction with adjusted coefficients. 3. Results are for preliminary design only, not valid for construction unless accompanied by a sealed test report by an accredited laboratory.

3.3 Condition:

When graded in accordance with TROPICAL FOREST PRODUCTS Grading Rules, the material shall be inspected and certified as being either:

- • 3.3.1 Air-dried and having a moisture content between 16% and 25%
- • 3.3.2 Kiln-dried and having a moisture content between 12% and 16%

3.4 Durability:

- 3.4.1. Above Ground - When subjected to weathering, insect attack, and other decaying elements, TROPICAL FOREST PRODUCTS wood Products shall have a durability rating no lower than Class 1 Highly Durable as per U.S. Forest Products Laboratory Technical Data Sheets.
- 3.4.2. In-Ground Contact - When subjected to weathering, insect attack, and other decaying elements, TROPICAL FOREST PRODUCTS brand wood products shall have a durability rating no lower than - Durable in Ground Contact, 15 years as per U.S. Forest Products Laboratory Technical Data Sheets.
- 3.4.3. Salt Water Submersion – When subjected to salt water marine environments, TROPICAL FOREST

TROPICAL

PRODUCTS brand wood products shall have a durability rating no lower than Resistant to Marine Borers as per U.S. Forest Products Laboratory Technical Data Sheets.

3.5 Flame Spread / Smoke Developed

When tested in accordance with ASTM E84, TROPICAL FOREST PRODUCTS brand wood products will have a surface burning flame spread index no greater than 25 and a Smoke Developed Index no greater than 400. NFPA Class A / UBC Class 1.

3.6 A CalFire Wildlife Urban Interface Certification Requirements - Decking.

When tested in accordance with SFM 12-7A-4, Parts A (Underdeck Flame) and B (Burning Brand) tests, TROPICAL FOREST PRODUCTS brand wood products will have a passing result.

When tested in accordance with ASTM E84-16 10 Minute Flame Spread Test will have a flame spread rating of 25 or less and a Class A rating.

3.7 CalFire Wildlife Urban Interface Certification Requirements – Siding.

When tested in accordance with ASTM E84-16 10 Minute Flame Spread Test, TROPICAL FOREST PRODUCTS brand wood products will have a flame spread rating of 25 or less and a Class A rating.

3.8 Mechanical Properties

When tested in accordance with ASTM D-143, it will have minimum design values

- 3.8.1. Modules of Elasticity no lower than 2,140,000 psi-Dry
- 3.8.2. Bending Strength no lower than 10,309 psi-Dry
- 3.8.3. Compression Parallel to Grain no lower than 10,960 psi-Dry
- 3.8.4. Compression Perpendicular to Grain no lower than 2900 psi-Dry
- 3.8.5. Shear Parallel to Grain no lower than 1245 psi-Dry

The Mechanical Property values have been generated through the lowest combined mechanical properties of the collective group of Class 1 Durable hardwood species sold under the Tropical Forest Products brand, including but not limited to Ipe, Garapa, Red Blau, Itauba, Cumaru, Ekki/Azobe, Angelim Pedra, Jatoba, Purpleheart, Muiricatiara,

TROPICAL

Tigerwood, Greenheart.

Individual species will have Mechanical Properties 'Equal To' or 'Greater Than' those that are listed. As such, the use of individual species will result in increased margins of safety.

Species-specific Mechanical Properties are available upon request.

3.9 Slip Resistance

When tested in accordance with ANSI A137.1 Section 9.6 (2017), TROPICAL FOREST PRODUCTS brand products will be considered High Traction and having a Static Coefficient of Friction (SCOF) no lower than .60 and a Dynamic Coefficient of Friction

(DCOF) no lower than .42.

3.10 Material Safety Data

When supplied in accordance with California Proposition 65, this wood product can result in exposure to (wood dust and/or unknown organically occurring chemicals), which (may/may not) be known to cause cancer, and which (may/may not) be known to cause congenital disabilities or other reproductive harm, and which (may/may not) cause skin irritation or other allergic reactions. It is always recommended that protective eyewear, a protective respiratory device, protective clothing, and protective gloves be used when handling wood products.

4.0 DESIGN AND INSTALLATION:

4.1 Design: Allowable Stresses:

Table 1 lists the minimum allowable stress values only for TROPICAL FOREST PRODUCTS brand products recognized in this report. These values must not be adjusted or used for NON-TROPICAL FOREST PRODUCTS brand products.

4.2 Installation / Safety:

As an engineered product or system, TROPICAL FOREST PRODUCTS brand products must be installed in accordance with the manufacturer's published Installation and Best Practices Guidelines.

- 4.2.1 Allowable Design Values: Appendix I represents the collective minimum allowable design values

TROPICAL

required for a wood species to be included under the design criteria of this report.

- 4.2.2 Decking Spans: Appendix II represents the maximum allowable deck spans based on the collective minimum allowable design values required for a wood species to be included under the design criteria of this report.
- 4.2.3 Stringer Spans: Appendix III represents the maximum allowable stringer spans based on the collective minimum allowable design values required for a wood species to be included under the design criteria of this report.
- 4.2.4 Decking, Stringers, Beams: Appendix IV Guide – TROPICAL FOREST PRODUCTS SPAN CHARTS lists the maximum allowable spans for Deck Boards, Stringers, and Beams • 4.2.5 TROPICAL FOREST PRODUCTS Grading Rules: Appendix V
- 4.2.6 MSDS Wood Dust / California Prop 65: Appendix VI
- 4.2.7 LEGAL LUMBER™ / Lacey Act “Due Care” Certificate of Compliance: Appendix VII

5.0 Conditions of Use:

TROPICAL FOREST PRODUCTS brand wood products listed in this report comply with or are suitable alternatives to what is specified in those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the manufacturer's published instructions and best practices, and the applicable code.
- 5.2 The use of TROPICAL FOREST PRODUCTS brand wood products as a component of a fire-resistant-rated assembly is outside the scope of this report.
- 5.3 The compatibility of fasteners with any supporting construction, including chemically treated wood, is outside the scope of this report.
- 5.4 TROPICAL FOREST PRODUCTS brand wood products must be mechanically fastened to the supporting construction. Where required by the code official, engineering calculations and construction documents consistent with this report must be submitted for approval. The calculations must verify that the supporting construction complies with the applicable building code requirements and is adequate to resist the loads imparted upon it from the products and systems discussed in this report. The documents must contain details of the attachment to the supporting structure consistent with the requirements of this report. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.5 TROPICAL FOREST PRODUCTS Brand wood products are products of foreign countries and must comply

TROPICAL

with all international laws pertaining to the legal and fair trade of forest products as defined under the U.S. Lacey Act, U.S. Foreign Corrupt Practices Act, U.S. Buy American Act, U.S. Forced Labor Laws.

6.0 EVIDENCE

- 6.1. Data in accordance with applicable portions of the ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail System (AC174), dated January 2012 (editorially revised December 2014)
- 6.2 Test Data in accordance with ASTM D-143 Mechanical Properties
- 6.4 Test Data in accordance with ASTM E-84 Surface Burning Characteristics
- 6.5 Test Data in accordance with CFM-7A-4 Parts A and B
- 6.5 Test Data in accordance with ANSI A137.1 Section 9.6 (2017)
- 6.6 Minimum Allowable Design Values for TROPICAL FOREST PRODUCTS Brand wood products
- 6.7 Tropical Forest Products Decking and Stringer Span Tables
- 6.7 TROPICAL FOREST PRODUCTS Grading Rules
- 6.8 Technical Data Sheets U.S. Forest Product Laboratory
- 6.9 Certificate of Environmental Compliance in accordance with LEGAL LUMBER™ and U.S. Lacey Act "Due Care" Standards Policies and Procedures, including Verification of Legal Origin by an Independent third-party chain of custody compliance and verification provider.
- 7.0 Material Safety Data Sheet – Wood Dust / California Proposition 65

7.0 IDENTIFICATION

The material described in this report must be identified by a label on the packaging bearing the TROPICAL FOREST PRODUCTS brand and product name or other documentary proof identifying the product as TROPICAL FOREST PRODUCTS.

TROPICAL

Appendix I

Appendix I

Wood Values from test (ASTM D143)

Inputs	Wood Name	Extreme Fiber Stress in Bending "FB" Single Member	Modulus of Elasticity	Compression		Shear parallel to Grain
				Parallel to Grain	Perpendicular to Grain	
	TFP	10,309	2,140,000	10,960	2,900	1,245

Input values from the tests

Allowable values For Wood (Based on ASTM D245)

Dimension Lumber 1" to 4" thick by 2" and wider

Wood Name	Grade	Extreme Fiber Stress in Bending "FB" Single Member	Modulus of Elasticity	Compression		Shear parallel to Grain
				Parallel to Grain II	Perpendicular to Grain	
Tropical Forest Products Species	Architectural	2,900	2,280,000	3,600	1,735	540
	FEQ	2,150	2,280,000	2,750	1,735	270
	COM/ SEL	1,800	2,280,000	2,100	1,735	270
	FAS	1,800	2,280,000	2,100	1,735	270

Values in PSI

Beam & Stringers 4" and thicker, width more than 2" greater than thickness

Wood Name	Grade	Extreme Fiber Stress in Bending "FB" Single Member	Modulus of Elasticity	Compression		Shear parallel to Grain
				Parallel to Grain II	Perpendicular to Grain	
Tropical Forest Products Species	Architectural	3,600	2,280,000	3,600	1,735	540
	FEQ	2,400	2,280,000	2,750	1,735	270
	COM/ SEL	1,800	2,280,000	2,100	1,735	270
	FAS	1,800	2,280,000	2,100	1,735	270

Values in PSI

TROPICAL

Appendix II

DESIGN INFORMATION TROPICAL FOREST PRODUCTS DECKING SPANS

MAXIMUM ALLOWABLE SPANS			
TROPICAL FOREST PRODUCTS DECKING SPECIES			
ALL GRADES			
Deck	Loading		
<u>Thickness</u>	<u>60 psf</u>	<u>100 psf</u>	<u>500 psf</u>
0.75 in	27 in	24 in	12 in
1.00 in	39 in	33 in	18 in
1.50 in	57 in	48 in	27 in
2.50 in	96 in	81 in	48 in
3.50 in	135 in	114 in	66 in

TROPICAL

Appendix II

DESIGN INFORMATION TROPICAL FOREST PRODUCTS STRINGER SPANS 100 PSF

1.5" Deck Thickness	STR. SIZES	STRINGER @ 1.5" X 5.5"					STRINGER @ 2.5" X 5.5"					STRINGER @ 3.5" X 5.5"					STRINGER @ 5.5" X 5.5"				
	STR. SPANS	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	5'-0"	6'-0"	8'-0"	9'-0"	10'-0"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"	6'-0"	8'-0"	10'-0"	12'-0"	14'-0"
BEAM SIZES	1.5" X 5.5"	6'-5"	5'-9"	5'-3"	4'-10"	4'-5"	5'-8"	5'-2"	4'-6"	4'-3"	4'-0"	5'-8"	5'-2"	4'-5"	4'-0"	3'-8"	5'-0"	4'-4"	3'-11"	3'-7"	3'-4"
	2.5" X 5.5"	8'-2"	7'-5"	6'-9"	6'-3"	5'-8"	7'-4"	6'-9"	5'-10"	5'-6"	5'-2"	7'-3"	6'-8"	5'-9"	5'-2"	4'-10"	6'-6"	5'-8"	5'-0"	4'-7"	4'-4"
	3.5" X 5.5"	9'-2"	8'-6"	8'-0"	7'-5"	6'-9"	8'-6"	7'-11"	6'-10"	6'-6"	6'-2"	8'-6"	7'-10"	6'-10"	6'-1"	5'-8"	7'-8"	6'-8"	6'-0"	5'-5"	5'-2"
	5.5" X 5.5"	10'-8"	9'-11"	9'-4"	8'-10"	8'-4"	9'-11"	9'-4"	8'-6"	8'-1"	7'-8"	9'-11"	9'-4"	8'-6"	7'-8"	7'-1"	9'-4"	8'-4"	7'-6"	6'-10"	6'-5"
	1.5" X 7.25"	8'-6"	7'-7"	6'-11"	6'-5"	5'-10"	7'-6"	6'-10"	5'-11"	5'-7"	5'-4"	7'-5"	6'-9"	5'-11"	5'-3"	4'-11"	6'-8"	5'-9"	5'-2"	4'-8"	4'-5"
	2.5" X 7.25"	10'-10"	9'-9"	8'-11"	8'-3"	7'-6"	9'-8"	8'-10"	7'-8"	7'-3"	6'-10"	9'-7"	8'-9"	7'-7"	6'-9"	6'-4"	8'-7"	7'-5"	6'-8"	6'-1"	5'-9"
	3.5" X 7.25"	12'-1"	11'-3"	10'-7"	9'-9"	8'-11"	11'-3"	10'-5"	9'-1"	8'-7"	8'-1"	11'-3"	10'-4"	9'-0"	8'-0"	7'-6"	10'-2"	8'-10"	7'-10"	7'-2"	6'-9"
	5.5" X 7.25"	14'-1"	13'-1"	12'-4"	11'-8"	10'-11"	13'-1"	12'-4"	11'-2"	10'-8"	10'-2"	13'-1"	12'-4"	11'-2"	10'-1"	9'-5"	12'-4"	11'-0"	9'-10"	9'-0"	8'-6"
	1.5" X 9.25"	10'-10"	9'-8"	8'-10"	8'-2"	7'-5"	9'-7"	8'-9"	7'-7"	7'-2"	6'-9"	9'-6"	8'-8"	7'-6"	6'-9"	6'-3"	8'-6"	7'-4"	6'-7"	6'-0"	5'-8"
	2.5" X 9.25"	13'-10"	12'-6"	11'-5"	10'-7"	9'-7"	12'-4"	11'-3"	9'-9"	9'-3"	8'-9"	12'-3"	11'-2"	9'-8"	8'-8"	8'-1"	10'-11"	9'-6"	8'-6"	7'-9"	7'-4"
	3.5" X 9.25"	15'-6"	14'-4"	13'-5"	12'-6"	11'-4"	14'-4"	13'-4"	11'-7"	10'-11"	10'-4"	14'-4"	13'-2"	11'-5"	10'-3"	9'-7"	12'-11"	11'-3"	10'-0"	9'-2"	8'-8"
	5.5" X 9.25"	18'-0"	16'-8"	15'-8"	14'-11"	14'-0"	16'-8"	15'-8"	14'-3"	13'-7"	12'-11"	16'-8"	15'-8"	14'-3"	12'-10"	11'-11"	15'-8"	14'-0"	12'-7"	11'-6"	10'-10"
	1.5" X 11.25"	13'-2"	11'-9"	10'-9"	10'-0"	9'-1"	11'-8"	10'-8"	9'-3"	8'-8"	8'-3"	11'-6"	10'-6"	9'-2"	8'-2"	7'-7"	10'-4"	8'-11"	8'-0"	7'-4"	6'-11"
	2.5" X 11.25"	16'-10"	15'-2"	13'-10"	12'-10"	11'-8"	15'-0"	13'-8"	11'-11"	11'-3"	10'-8"	14'-10"	13'-7"	11'-9"	10'-6"	9'-10"	13'-4"	11'-6"	10'-4"	9'-5"	8'-11"
	3.5" X 11.25"	18'-10"	17'-6"	16'-4"	15'-2"	13'-9"	17'-6"	16'-2"	14'-0"	13'-3"	12'-7"	17'-6"	16'-0"	13'-11"	12'-5"	11'-7"	15'-8"	13'-7"	12'-2"	11'-2"	10'-6"
5.5" X 11.25"	21'-11"	20'-4"	19'-1"	18'-2"	17'-0"	20'-4"	19'-1"	17'-4"	16'-6"	15'-6"	20'-4"	19'-1"	17'-4"	15'-5"	13'-6"	19'-1"	17'-0"	15'-3"	12'-10"	11'-8"	

TROPICAL

Appendix III Tropical Forest Products Grading Rules

Grade Selection

Grade selection and specification will significantly impact the appearance and performance of wood products in any given application.

NHLA (National Hardwood Lumber Association) Grading Rules only go so far, allowing more defects in its highest grades than we allow in our production. That's why Tropical Forest Products has developed and published grading standards and product specification language, which we apply to our own decking, cladding, lumber, and timber products.

When tropical hardwoods are specified or purchased without clearly defining grade expectations, there is no assurance of the quality and consistency of the product delivered and no accountability standard set for the supplier. And since grade affects price, what looks like a good deal on paper might not look nearly as good on your project. If the product is used in structural applications like decking, the grade directly impacts mechanical properties and load performance.

Based upon our published grading rules and ASTM D143 physical properties testing, Tropical Forest Products has developed, engineered, and certified ASTM D245 Allowable Design Values for hardwoods based on grade.

It is important to note that TFP Tropical Forest Products Premium Select Architectural Grade hardwood decking has almost twice the strength of generic FAS grade hardwood decking. Because of the establishment of definitive grading rules, TFP can offer hardwood decking, stringer, and beam products available with structural engineer certified and stamped span charts and code-compliant submittal documents.

We strongly encourage specifiers, consumers, and contractors to utilize these standards in their decision-making process and to specifically reference these standards in their purchase orders.

TROPICAL

Grading Rule Definitions

As with most natural wood products, tropical hardwoods possess natural "Appearance Characteristics" that add to their unique beauty. Those that are appreciated include color variation and distinctive grain patterns. Other characteristics in all types of lumber that develop naturally or through manufacturing are known as "Physical Characteristics," "Sound Defects," "Unsound Defects," and "Milling Defects." The following is a summary of the typical characteristics one might find in a wood grade specification.

It is important to note that the industry standard allows for a 5% sub-grade in all production to allow for human error in the grading process.

Appearance Characteristics

- 1) Color Variation
- 2) Mixed Grain
- 3) Drying Checks
- 4) Reverse Grain
- 5) Birdseye
- 6) Pin Knots
- 7) Water Stain
- 8) Discoloration
- 9) Sticker Marks
- 10) Molder Knife Marks

Physical Characteristics

- 1) Bow
- 2) Crook
- 3) Cup
- 4) Twist

Milling Defects

- 1) Skip
- 2) Torn grain
- 3) Non-compliant profiling
- 4) Hit or Miss

Sound Defects

- 1) Pin holes
- 2) Sound knots
- 3) Torn grain

Unsound Defects

- 1) Large borer holes
 - 2) Splits
 - 3) Unsound knots
 - 4) Shake
 - 5) Sapwood
-

TROPICAL

TROPICAL FOREST PRODUCTS PREMIUM SELECT- Architectural Grade... Selected for Premium Appearance on 4 Sides and 4 Edges.

Grading Face, Back Face, and Edges – 100% All Heart, Free of Heart Center, Free of Sapwood:

- Include - Appearance Characteristics with a maximum of 5% tight reverse grain.
- Include - Physical Characteristics which can be removed using standard installation methods, tools, or sanding.
- Exclude - Sound Defects
- Exclude - Unsound Defects
- Exclude - Milling Defects.
- For Structural Application – Not Allowed... pin knots bigger than ½" at any face and/or edge, Maximum permitted slope of Grain 1" in 10", length of end split and surface split shall be as per ASTM D245 (5.4.3)

Tropical Forest Products FEQ (First Export Quality/) - Commercial Grade...Hand Selected for Serviceable Appearance on 1 Face and 2 Edges.

- Include - Appearance Characteristics. Unlimited Tight Reverse Grain.
- Include - Physical Characteristics that can be removed using standard installation methods, tools, or sanding.
- Include - Sound Defects
- Grading Face – Clear All Heart: Free of Heart Center, Free of Sapwood
- Exclude - Unsound Defects
- Exclude - Milling Defects
- Back Face and Edges:
 - Include – Unsound Defects
 - Include – Milling Defects
- For Structural Application – Not Allowed... knots bigger than ¾" at narrow face or edges, centerline knots bigger than 1-3/4" at the wide face, edge knots bigger than ¾" at the wide face, Maximum permitted slope of grain 1" in 8", length of end split and surface split shall be as per ASTM D245 (5.4.3)

TROPICAL

COM SEL/FAS represents the standard market export grade produced by the mills, offered by many importers, and is typically uninspected. It is not uncommon to hear FAS qualities described as Prime, #1, Select and Better and First Quality in the open market.

No grade representation means anything if not backed up by clearly defined grading rules. As such, TFP has established rules for FAS quality. It is important to note that the FAS grade, with the exception of sapwood, is just as resistant to rot as other grades. It is simply lower in strength and less attractive in appearance than higher grades.

- First and Seconds ratios - Undefined.
- Include - Appearance Characteristics.
- Include - Physical Characteristics which can be removed using standard installation methods, tools, or sanding.
- Include - Sound Defects
- Include - Unsound Defects
- Include - Milling Defects.
- For Structural Application – Not Allowed... knots bigger than $\frac{3}{4}$ " at narrow face or edges, centerline knots bigger than $1\frac{3}{4}$ " at the wide face, edge knots bigger than $\frac{3}{4}$ " at the wide face, Maximum permitted slope of grain 1" in 6", length of end split and surface split shall be as per ASTM D245 (5.4.3)

TROPICAL

Appendix V MSDS Wood Dust / California Prop 65

STANDARD MATERIAL SAFETY DATA SHEET (MSDS) FURNISHED BY TROPICAL FOREST PRODUCTS HAZARD WARNING FOR UNTREATED WOOD PRODUCTS

TRADE NAME: Wood Dust

SYNONYMS: None

CASE NO.: None

DESCRIPTION

Particles are generated by any manual or mechanical cutting or abrasion process performed on wood.

PHYSICAL DATA

Boiling Point	Not Applicable.
Specific Gravity	Variable (dependent on wood species and moisture content).
Vapor Density	Not Applicable.
% Volatiles by Volume	Not Applicable.
Melting Point	Not Applicable.
Vapor Pressure	Not Applicable.
Solubility in H ₂ O (% by wt.)	Insoluble.
Evaporation Rate (Butyl Acetate = 1)	Not Applicable.
pH	Not Applicable.
Appearance and Odor	Light to dark colored granular solid. Color and odor are dependent on the wood species and the time elapsed since dust was generated.

FIRE AND EXPLOSION DATA

Flash Point	Not Applicable.
Auto-Ignition Temperature	Variable (typically 400-500°F).
Explosive Limits in Air	40 grams/m ³ .
Extinguishing Media	Water, CO ₂ , Sand.
Special Fire Fighting Procedures	Use water to wet down wood dust to reduce the likelihood of ignition or dust dispersion into the air. Remove burned or wet dust to an open area after extinguishing the fire.
Unusual Fire and Explosion Hazard	Wood dust is a strong to severe explosion hazard if a dust "cloud" contacts an ignition source.

TROPICAL

HEALTH EFFECTS INFORMATION

Exposure Limit ¹	ACGIH TLV®: TWA – 5.0 mg/m ³ ; STEL (15 min.) – 10 mg/m ³ (softwood); TWA – 1.0 mg/m ³ (certain hardwoods such as beech and oak). OSHA PEL: TWA – 5.0 mg/m ³ ; STEL (15 min.) – 10 mg/m ³ (all soft and hard woods, except Western Red Cedar. Western Red Cedar: TWA – 2.5 mg/m ³
Skin and Eye Contact	Wood dust can cause eye irritation. Various species of wood dust can elicit allergic contact dermatitis in sensitized individuals. Not applicable.
Ingestion	Not known to occur.
Skin Absorption	May cause nasal dryness, irritation, and obstruction. Coughing, wheezing, sneezing, sinusitis, and prolonged colds have also been reported.
Inhalation	Wood dust, depending on species, may cause dermatitis on prolonged, repetitive contact; may cause respiratory sensitization and/or irritation. Prolonged exposure to wood dust has been reported by some observers to be associated with nasal cancer. Wood dust is not listed as a carcinogen by LARC, NTP, ACGIH, or OSHA.
Chronic Effect	

HEALTH EFFECTS INFORMATION

Conditions Contributing to Instability	Stable under normal conditions.
Incompatibility	Avoid contact with oxidizing agents and drying oils. Avoid open flame. Product may ignite at temperatures over 400° F.
Hazardous Decomposition Products	Thermal oxidative degradation of wood produces irritating and toxic fumes and gases, including CO, aldehydes, and organic acids.
Conditions Contributing to Polymerization	Not Applicable.

¹ Although OSHA's Air Contaminants Rule, including OSHA's wood dust PELs, was struck down in ALF-CIO v. OSHA, 965 F. 2d 962 (11th Cir. 1992), a number of states have incorporated those provisions in their state plans. Additionally, OSHA has announced that it may cite companies under the OSH Act general duty clause under appropriate circumstances for non-compliance with these levels.

TROPICAL

PRECAUTIONS AND SAFE HANDLING

- Avoid eye contact.
- Avoid repeated or prolonged contact with the skin. Careful bathing and clean clothes are indicated after exposure.
- Avoid prolonged or repeated breathing of wood dust in the air.
- Avoid contact with oxidizing agents and drying oils.
- Avoid open flame.

GENERALLY APPLICABLE CONTROL MEASURES

- Ventilation: Provide adequate general and local exhaust ventilation to maintain healthy working conditions.
- Wear goggles or safety glasses. Depending upon dust conditions, other protective equipment such as gloves and approved dust respirators may be needed.

EMERGENCY AND FIRST AID PROCEDURES

- Eyes: Flush with water to remove dust particles. If irritation persists, get medical attention.
- Skin: If a rash, persistent irritation, or dermatitis occurs, get medical advice where applicable before returning to work where wood dust is present.
- Inhalation: Seek fresh air. If persistent irritation, severe coughing, or breathing difficulties occur, get medical advice before returning to work where wood dust is present.
- Ingestion: Not applicable.

SPILL/LEAK CLEAN-UP PROCEDURES

- Sweep or vacuum spills for recovery or disposal; avoid creating dust conditions. Provide good ventilation where dust conditions may occur. Place recovered wood dust in a container for proper disposal.
- **IMPORTANT:** The information and data contained herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation, and verification. AF&PA makes no warranty of any kind, express or implied, concerning the accuracy or completeness of the information and data herein. AF&PA will not be liable for claims relating to any party's use of or reliance on information and data contained herein, regardless of whether it is claimed that the information and data are inaccurate, incomplete, or otherwise misleading.

TROPICAL

MSDS California Prop 65

This product is a naturally occurring organic material defined as "naturally durable wood" under International Building Codes.

WARNING: This wood product can expose you to [Wood Dust and/or Unknown Organically Occurring Chemicals], which [may /may not] be known to cause cancer, and which [may/ may not] be known to cause congenital disabilities or other reproductive harm, and which [may/may not] cause skin irritation or other allergic reactions.

It is always recommended that protective eyewear, a protective respiratory device, protective clothing, and protective gloves be used when handling wood products.

This wood product and its wood packaging are either kiln-dried or fumigated prior to export from the country of origin and are virtually free from invasive insect, plant, or animal species.

TROPICAL

Appendix V MSDS Wood Dust / California Prop 65

“DUE CARE” CERTIFICATE OF COMPLIANCE

Products carrying the LEGAL LUMBER label, or this certificate of compliance, meet a comprehensive set of Controlled Wood, Chain of Custody, Life Cycle Impact, and Due Care Standards, Policies, and Procedures that support environmental sustainability and compliance initiatives.

All LEGAL LUMBER™ branded products have been third-party verified of legal origin as being legally harvested, transported, exported, imported, and documented in compliance with all country of origin, international and domestic laws, rules, regulations, and treaties pertaining to the fair and legal trade of forest products, including but not limited to the ITTA (International Tropical Timber Trade Agreement), CITES (Convention

On The International Trade of Endangered Species), U.S. Department of Agriculture Lacey Act, U.S. Foreign Corrupt Practices Act, U.S. Forced Labor Laws, U.S. Buy American Act, California Deforestation-Free Procurement Act, California Prop 65, and ISO (International Organization for Standardization) 14001 Environmental Management Systems.

All LEGAL LUMBER™ branded products are derived from forests that are naturally occurring, renewable and sustainable. LEGAL LUMBER brand products are not harvested from forests or forest plantations where traditional, civil, or property rights have been violated; forests that have high conservation values that are threatened; forests that have been genetically modified; or forests that have been converted to a non-forest use. LEGAL LUMBER™ branded products are sourced with a preference to those forestry operations implementing LIL (Low Impact Logging) techniques and sustainable forest management practices.

All LEGAL LUMBER™ branded products are 100% organic, grown without the use of chemical fertilization, and are regenerated naturally or by seeding and replanting. All LEGAL LUMBER branded products are either kiln dried or fumigated and are free from invasive insect, plant, or animal species.

The natural service life of wood products in their appropriate applications exceeds their natural growth cycle.

TROPICAL

Naturally durable hardwood products trap and store carbon and can be reclaimed, reused, or downcycled. Naturally durable hardwood products are 100% biodegradable and do not require for service any petroleum-based or inorganic chemical treatments, adhesives, or coatings for use. Naturally durable hardwood products do not require for service any specialized handling, storage, or disposal procedures and generate zero post-industrial or post-consumer non-biodegradable waste. Naturally durable hardwood products are also safe for human and animal contact, meet Low

VOC emission standards and meet International Building Code, International Residential Code, and Cal Fire Wildlife Urban Interface Code requirements.

Naturally durable hardwood products meet Living Building Challenge standards, not containing in their untreated natural condition any applied Red List Materials or Chemicals or any chemicals other than those that may occur naturally within the wood species.

LEGAL LUMBER™ is a corporate 'Due Care' Verification of legal origin and environmental compliance program standards, policies, and procedures established by Tropical Forest Products to ensure international environmental compliance and promote the life cycle benefits associated with the world's most renewable resource...Trees and the wood products that come from them.