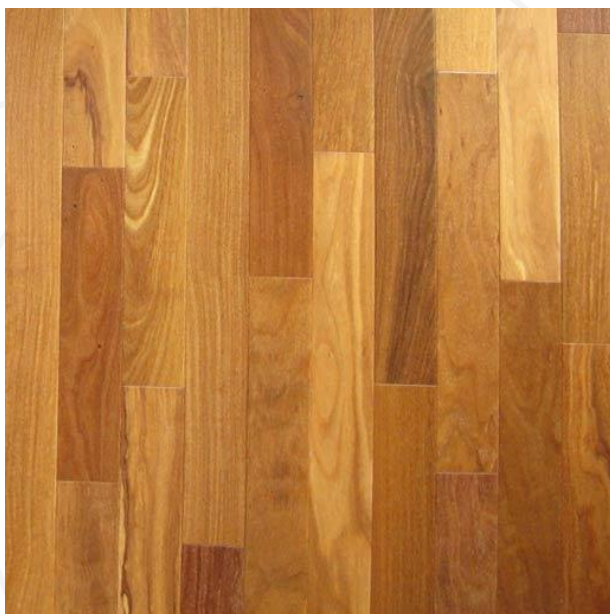


## Cumaru - Technical Bulletin



Cumaru is an extremely dense wood species known for its interwoven grain and natural resistance to rot. Cumaru Decking is considered an “Or Equal” to Ipe for use in commercial decking projects like the famous Atlantic City Boardwalk.

Color and Grain Variation is typical of materials created by nature and recognized as part of the beauty that sets natural products apart from manufactured products. This is particularly true where wood products are concerned, though some species have more or less grain and color variation than others. This should always be considered when looking at wood samples as Tropical Forest Products wood products are supplied mixed grain and are not sorted for color.

Some consistency in color can be achieved through either finishing wood with pigmented penetrating oil-based sealer or by allowing wood to weather or grey out naturally.

Grain, density and moisture content can all affect finishing. Every piece of wood will accept a finish differently, even pieces from the same tree. Sampling finishes is always recommended prior to full application.

Tropical Forest Products does not warrant the performance of finishes. Warranties if available are the responsibility of the finish manufacturer.

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Tropical Forest Products Cumaru Decking 5/4x6x8' S4S E4E



Atlantic City Boardwalk

## Product Description

**Brand:** Tropical Forest Products

**Type:** Cumaru Decking

**Size:** 5/4x6 (net 1"x5.5")

**Length Range:** 8' to 20'

**Profile:** S urfaced 4 Sides / Radius 4 Edges

**Grade:** P remium Select Architectural

**Condition:** K iln Dried 1 2-14%

**Durability**  
**Rating:** Class 1 - Highly Durable **Fire**  
**Rating:** Class A

**Warranty:** 25 years

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### 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	
	Cumaru	27,270	3,030,000	13,720	3,540	1,245

### 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	
Cumaru	Architectural	7,250	3,220,000	4,000	2,120	540
	FEQ	5,700	3,220,000	3,450	2,120	270
	COM/ SEL	4,750	3,220,000	2,600	2,120	270
	FAS	4,750	3,220,000	2,600	2,120	270

Values in PSI

Beam & Stringers 4" and thicker, width more than 2" grater 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	
Cumaru	Architectural	9,500	3,220,000	4,500	2,120	540
	FEQ	6,300	3,220,000	3,450	2,120	270
	COM/ SEL	4,750	3,220,000	2,600	2,120	270
	FAS	4,750	3,220,000	2,600	2,120	270

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Values in PSI

### ***Additional Grading notes:***

#### Architectural:

1. It is not allow pin knots bigger than 1/2" at any face and/or edge
2. Maximum permitted slope is 1" in 10"

#### FEQ:

1. It is not allow knots bigger than 3/4" at narrow face or edges
2. It is not allow centerline knots bigger than 1-3/4" at wide face
3. It is not allow edge knots bigger than 3/4" at wide face
4. Maximum permitted slope is 1" in 8"
5. Length of end split and surface split shall be per ASTM D245 (5.4.3)

#### COM/ SEL / FAS:

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

#### Notes:

1. 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 of adjusted coefficients.
3. Results are for preliminary design only; not valid for construction unless accompanied by a sealed test report by an accredited laboratory.

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**SECTION 061500****WOOD DECKING, LUMBER AND TIMBERS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Provide labor, materials and equipment necessary to complete the work of this Section, including the following:
1. Wood decking, lumber and timbers for the following application:
    - a. Decking, Lumber and Timbers
- B. Related Work: The following items are not included in this Section and will be performed under the designated Sections.
1. Section 061000 – ROUGH CARPENTRY for other rough carpentry work.
  2. Section 062000 – FINISH CARPENTRY for other finish carpentry work.
- C. Reference Standards Technical: Comply with applicable requirements of the following:
1. ANSI B101.1 – Standard Test Method for Determining the Static and Dynamic Coefficient of Friction of Ceramic Tile and Other like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
  2. ASTM D143 – Standard Test Methods for Small Clear Specimens of Timber.
  3. ASTM E 84 -16 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. Reference Standards Legal and Environmental: Comply with applicable requirements of the following:
1. U.S. Buy American Act.
  2. U.S. Lacey Act.
  3. U.S. Foreign Corrupt Practices Act
  4. U.S. Forced Labor Laws
  5. CITES (Convention on the International Trade of Endangered Species)

**1.2 SUBMITTALS**

- A. Submittals: Submit under provisions of Division 01.
- B. Product Literature: Manufacturer's product literature describing all components. Include Best Practices installation and maintenance recommendations and instructions.
- C. Grading Rules – Tropical Forest Products "or Equal" Tropical Hardwood Decking - Grading Rules and Definitions".

- D. Verification Samples: For each type of decking, lumber and timbers.
- E. Certificate of Compliance “Inspection”: A vendor certificate confirming product compliance with grade and quality requirements.
- F. Certificate of Compliance “Technical”: A vendor certificate confirming product compliance with minimum specified Physical, Mechanical and Technical performance requirements as defined by the specification.
- G. MSDS (Material Safety Data Sheet) – Submit a Material Safety and Data Sheet for the wood products supplied on the project.
- H. Verification of Environmental Compliance: Manufactures documented, comprehensive and verifiable Policies and Procedures confirming participation in and compliance with Legal Lumber™ or Pre-Approved Equal “Due Care” Environmental Compliance Program.
- H.1 Submit a certificate or certificates verifying manufacture compliance with Legal Lumber™ Environmental Compliance Program “Or Pre-Approved Equal” including but not limited to the following...
1. Manufacturers Environmental Commitment Statement...confirming Manufacturers commitment to source forest products from forests which **are** naturally occurring, renewable and sustainable... and **are not** harvested from forests or forest plantations where traditional, civil or intellectual property rights have been violated, forests having high conservation values which are threatened, forests that have been genetically modified or forests which have been converted to-non forest use with a supply preference given to those forest operations implementing LIL (low Impact Logging) techniques and sustainable forest management practices.
  2. Manufacture certificate of compliance confirming that the materials supplied meet to the Low Life Cycle Environmental Impact Criteria being 100% organic and grown without the use of chemical fertilization and are regenerated naturally or by seeding and replanting. That the natural service life of the materials supplied exceed their natural their natural growth cycle, trap and store carbon and are able to be reclaimed, re-used, and down-cycled. That the materials supplied are 100% biodegradable and do not require for service any petroleum based or inorganic chemical treatments, adhesives or coatings. Materials supplied do not required for service any specialized handling, storage or disposal procedures and generate zero post-industrial or post-consumer non –biodegradable waste. That the materials supplied are safe for human and animal contact, meet low VOC emission standards and are free from invasive insect, plant or animal species having been kiln dried or fumigated.
  3. Manufacture certificate of compliance verifying that materials supplied are permitted for free trade under CITES (Convention on the International Trade of Endangered Species)
  4. Manufacture certificate verifying compliance and indemnification U.S. Lacey Act ‘Due Care’ guidelines including but not limited to U.S. Buy American Act, U.S. Foreign Corrupt Practices Act, U.S. Forced Labor Laws and all other international and domestic laws pertaining to the Legal Fair Trade of forest products.

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5. Manufactures Controlled Wood certificate confirming independent third party Controlled Wood Legal Chain of Custody Auditing and Verification of material supplied from Harvest to Import in compliance with U.S. Lacey Act 'Due Care' requirements.
  6. Manufactures Valid FSC Chain of Custody certificate... verifying Vendors ability to trade in both FSC Certified and Non FSC certified forest products.
- I. **Optional USGBC LEED Project Submittals Only, FSC Certified Wood:** Submit chain-of-custody certificates signed by manufacturer certifying that wood products comply with FSC forest certification and chain-of-custody requirements. Include evidence that mill and fabricator is certified for chain-of-custody or that outsourcing agreements are in place approved by an FSC-accredited certification body.
- 1.3 QUALITY ASSURANCE
- A. Manufacturer/Vendor Qualifications: Products covered under this Section shall be supplied by a single manufacturer/vendor unless otherwise specified with a minimum of fifteen years proven production or supply experience of the materials specified.
  - B. Installer Qualifications: Installer shall have a minimum of three years proven construction experience and be capable of estimating and building from drawings and details, determining elevations, in addition to proper material handling.
  - C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01.
- 1.4 DELIVERY, STORAGE, AND HANDLING
- A. Protect materials during shipment, storage and construction against damage. If material is air dried, stickers of a minimum of 10mm shall be placed between each layer of boards when packed. If material is kiln dried, material shall be dense packed and wrapped.
  - B. All units shall be individually strapped to wood pallets or blocking of a minimum thickness to allow the egress of lift forks using high strength strapping with a minimum of 4 straps per crate.
  - C. Store a minimum of 4 inches off the ground in a dry location and cover with polyethylene to protect from contact with materials which would cause staining or discoloration.

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## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Basis-of-Design: Tropical Forest Products Cumaru, *Dipteryx odorata*. species by Tropical Forest Products, Tel 905-672-8000, [www.tropicalforestproducts.com](http://www.tropicalforestproducts.com)
- B. Moisture Content:
- Air Dried, moisture content of 18 to 25 percent; all dimensions when net thickness is over 1 inch.
  - Kiln Dried, moisture content of 12 to 18 percent; all dimensions when net thickness is 1 inch or less.
- C. Surface:
- S4S (surfaced four sides), E4E (eased four edges). Edges shall be eased to a radius of 1/8 inch.
  - Rough Sawn. Edges shall be square.
  - Custom profiled. Profiles shall be as per plans and specifications.
- D. Dimensions on Drawings: Nominal and Actual Size shall be listed.
- E. Length:
- Lumber shall be supplied over specified length for final fit in the field.
  - Lumber shall be supplied precision trimmed to specified lengths only when specified in writing.
- F. Dimensional Tolerance: Plus or minus 0.125 inch in width and 0.0625 in thickness, measured at time of milling.
- G. End Coating: Supply lumber with ends sealed with Anchorseal™, Paraffin "Or Equal" wax end sealer. Lumber shall be resealed after cutting to reduce end splits.
- C. Grade Option/Requirements:
- D. Tropical Forest Products Premium Select Architectural Grade (First 4 Faces 4 Edges) Inspected and Hand Selected for Serviceable appearance on 4 faces and 4 Edges (reversible).
- Grading Face, Back Face, and Edges – Clear All Heart.
    - Include - Appearance characteristics.
    - Include - Physical characteristics which can be removed using normal installation methods, tools, or sanding.
    - Exclude - Sound defects.
    - Exclude - Unsound defects.
    - Exclude - Milling defects.

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- E. FEQ Commercial Grade (First One Face and Better) Inspected for serviceable appearance on 1 face and two edges.
1. Grading Face, Back Face, and Edges.
    - a. Include - Appearance characteristics.
    - b. Include - Physical characteristics which can be removed using normal installation methods, tools, or sanding.
    - c. Include - Sound defects.
  2. Grading Face – Clear All Heart: Exclude unsound defects and milling defects.
  3. Back Face and Edges: Include unsound defects and milling defects.
- F. Mechanical Properties: Meet or exceed the following when tested in accordance with ASTM D143:
1. Bending Strength: 22,400 psi
  2. Modulus of Elasticity: 3,010,000 psi/
  3. Compression Parallel to Grain: 13,200 psi.
  4. Compression Perpendicular to Grain: 3,540 psi.
  5. Average Air-Dry Density: Ranges from 62 to 81 pcf.
  6. Basic Specific Gravity: Ranges from 0.80-0.91.
- G. Coefficient of Friction: Meet or exceed ADA requirements for Static and Dynamic Coefficient of Friction in accordance with ANSI B101.1:
1. Static: Wet - .69 FP.
  2. Dynamic: Wet - .47 FP.
- H. Decay Resistance: Meet or exceed International Building Code/International Residential Code definition for “Naturally Durable Wood” being durability rated by the U.S Forest Products Laboratory or the Forest Research Laboratory Oregon State University as Class 2 or better.

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Cumaru (Dipteryx Odorata) = Class 1.

- I. Fire Rating, Acute Inhalation, Combustion Toxicity Requirements: Meet or exceed the following.
  1. Lumber supplied shall be naturally fire resistant without the use of any fire resistant treatments to meet NFPA Class A, in accordance with ASTM E 84-16 standard test methods.
  2. Lumber Supplied shall meet International Building Code / International Residential Code minimum requirements for "Limited Combustible Wood".
- II. Environmental Compliance:
  1. Legal Lumber™ Compliance: All lumber shall meet minimum environmental requirements as defined under Legal Lumber™ Controlled Wood, Chain of Custody, Life Cycle Impact and Due Care – Environmental Compliance Standards, Policies and Procedures confirming that:
    - a. All wood products have been verified of legal origin and compliance 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 U.S. Department of Agriculture Lacey Act, ITTA (International Tropical Timber Trade Agreement), CITES (Convention On The International Trade of Endangered Species), and U.S. Buy American Act.
    - b. All Wood products are derived from forests which are naturally occurring, renewable and sustainable and are not harvested from forests or forest plantations where traditional or civil rights have been violated, forests having high conservation values which are threatened, forests that have been genetically modified or forests which have been converted to non-forest use. All Wood Products and their packaging materials have been kiln dried and or fumigated and are free from live and or invasive insect, plant or animal species.
    - c. All Wood products are 100 percent organic and grown without the use of chemical fertilization and are regenerated naturally or by seeding and replanting. The natural service life of wood products exceed their natural growth cycle, trap and store carbon and are able to be reclaimed, reused or recycled. Iron Woods® do not require for service any petroleum based or inorganic chemical treatments adhesives or coatings. Wood Products® do not require for service any specialized handling storage or disposal procedures and generate zero post-industrial or post-consumer non-biodegradable waste. Wood Products are also safe for human and animal contact, meet Low VOC emission standards and meet International Building Code and International Residential Code requirements for naturally durable wood.
  2. Optional USGBC LEED Compliance Only: Certified Wood: Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-1-001, "FSC Principles and Criteria for Forest Stewardship."

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## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Prior to starting work inspect the substrate to ensure that it has been properly prepared to accept materials specified in this Section. Commencement of work shall imply acceptance of surfaces and deck conditions.
1. Review drawings for items such as planters, hot tubs, sculptures or equipment that will be installed on top of wood decking, lumber and timbers. Verify with manufacturer whether additional supports are required.
  2. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
  3. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved submittals including the following:
1. Install materials plumb, true to line, cut and fitted.
  2. Scribe and cope as required for accurate fit to adjacent construction.
  3. Use manufacturer's recommended fasteners.
  4. Fasten tight to supports. Provide shims if there are variations in framing.

### 3.3 CLEANING AND PROTECTION

- A. Protect from damage during construction operations. Promptly repair any damaged surfaces. Remove and replace work which cannot be satisfactorily repaired.
- B. Clean using materials recommended by the manufacturer to remove stains, dirt and debris prior to final acceptance.

END OF SECTION

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