BLACKLABEL
THE WORLD'S BEST WOOD

TECHNICAL BULLETIN

Black Label™ vs competitive brands or generic decking and cladding.

In an industry where the quality of products is often misrepresented through generic trade names and species, Black Label™ stands out by ensuring clarity and precision for our customers.

To eliminate any confusion regarding species, Black Label™ ensures that all products bearing our brand are subject to independent inspection, stringent grading, meticulous selection, certification, and warranty based on the precise grade defined by our GMX Group Grading Rules. Compliance certificates can be provided upon request.

Case Study: Black Label™ Ipe

The Lapacho Group of Tabebuia, as identified by both the U.S. Forest Products Laboratory and the U.S. Naval Research Laboratory, is noted for its exceptional resistance to decay, termites, and marine borers. This group can be visually identified by lapachols (yellowish powder) in the wood cells, seen when the timber is cross-cut. However, specific subspecies within this group can only be distinguished microscopically. Therefore, claims that certain subspecies are selected for their color or other attributes are inaccurate.

Without defined grading rules, mills can produce lumber with defects that negatively impact the performance and appearance of these materials, resulting in inconsistencies within the Ipe market.

Generic "Ipe" is often imported under the broad grade term FAS (First and Seconds) or under brands without specific species or grading guidelines. These products may contain non-durable sapwood, borer holes, knots, shakes, and other milling defects.

Premium Quality: Black Label™

The Black Label™ Premium Select Architectural Grade is carefully chosen to be free of defects on all sides, representing the highest industry standards. Detailed grading rules are available upon request.

We encourage consumers to protect themselves by requesting specific species grades and quality standards for their wood products. If a supplier fails to provide this information, it is a strong indication that the product may not meet expected standards.

Transparency fosters accountability. The more you know, the better we appear.

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6 Inch vs 4 Inch Decking: An Aesthetic Decision

6" WIDE DECK BOARDS

4" WIDE DECK BOARDS

Deciding between 6" wide (net 5.5") and 4" wide boards for your deck is largely a matter of aesthetics.

The 6" width is the standard in most markets and is particularly common for composite decking. However, in the North East U.S., especially Long Island, NY, 4" decking is quite popular.

Notably, 4" boards are used on the Atlantic City and Disney boardwalks, while 6" boards are more typical for other boardwalks.

A key advantage of 6" wide boards is that they need fewer fasteners, which reduces both material and labor costs.

On the other hand, 4" decking resembles traditional flooring, as porch floors are typically 4" wide. Additionally, in wood decks, 4" boards offer better dimensional stability; combining increased thickness with decreased width generally enhances stability.

Ultimately, the choice between 6" and 4" boards is mainly about aesthetics, with natural wood decking providing both options.

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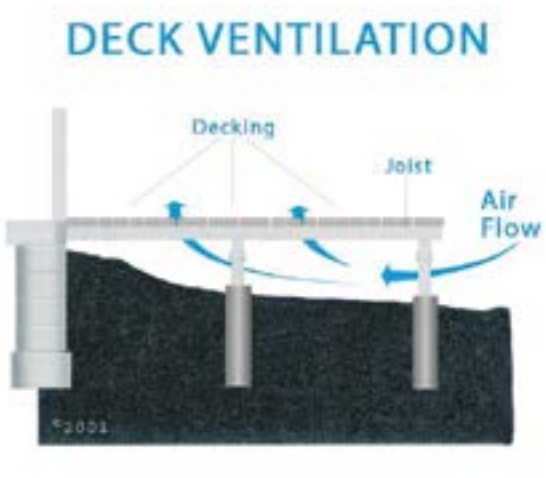
Deck Ventilation

It's commonly understood that ensuring adequate air flow and ventilation around and beneath wooden decking is essential for its stability and performance.

Air-dried decking is usually supplied with a moisture content ranging from 18% to 25%. If the moisture content isn't properly equalized before installation, this type of decking can be more susceptible to contraction and cupping right after being installed. Depending on the moisture level at the time of installation, along with climate and site conditions, air-dried decking can shrink up to 1/8" on a 4" board and 1/4" on a 6" board.



In contrast, Black Label™ Kiln-Dried Decking is pre-conditioned to a moisture content of approximately 12% to 14%, which helps reduce the potential for shrinkage and expansion.

High moisture levels underneath a deck, combined with the effects of sunlight and heat on the deck's surface, can create stress leading to increased checking, cupping, or warping. Certain deck designs, such as those at ground level or on rooftops, may have reduced ventilation. What can be done to mitigate issues in these scenarios?

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Understanding that the stability of decking is directly linked to its thickness-to-width ratio is crucial. Boards with a larger width relative to their thickness tend to be less stable. For example, a 1x4 board offers more stability than a 1x6 board, and a 5/4x4 board is significantly more stable than a 5/4x6.

What's happening with the deck at the top?

The deck was set up in a concrete pan, with pressure-treated joists and decking installed using adhesive and hidden fasteners. The concrete pan retains water, keeping the area between the joists wet and causing the tannins in the decking to leach out and create stains. Meanwhile, the adhesive film at the joist connections is preventing the decking directly over the joists from becoming damp, so it's weathering as expected. However, this uneven staining might be just the beginning. Without proper airflow and moisture management underneath the deck, it's likely that the boards will experience movement in the future.

Addressing Poor Ventilation

From what we've observed, a 5/4x4 deck board, whether air-dried or kiln-dried, typically offers the best performance for decks with limited ventilation, whether residential or commercial, regardless of the fastening method used.

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Alternatively, you might explore products like Black Label™ Roof Deck Tiles and Pedestal Systems or Decking and Pedestal Systems, designed for areas with limited ventilation. These deck tiles are made from wood slats with a stable thickness-to-width ratio. Shorter-length components can provide an affordable and innovative solution for deck construction.

The Black Label™ Deck Tile systems come in sizes of 24" x 24", 24" x 48", 24" x 72", and 24" x 96" and are designed to facilitate drainage. They can be directly installed on any level surface using our Black Label™ Elevate EPDM, Star T, or Self-Leveling or Fixed Head Screw Jack pedestals. For a budget-friendly approach to building a deck right at ground level, you can pour a concrete slab and then place pedestals and tiles on top.

Additionally, Black Label™ Deck Tiles are a great choice for traditionally built decks. By doubling the stringers at 24" intervals and securing them at the corners with 4 Pro Plugs™ per tile, you can easily install the tiles. These tiles offer a distinctive look and can substantially reduce overall construction costs. They also allow for a range of design options and patterns.

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Mold, Mildew, and Stains on Wood Decking and Cladding

Mold Concerns on Wood Decking

Occasionally, we receive inquiries about mold growth on wood decking. Mold can develop on any building material. It forms when heat and moisture combine with organic substances like dirt and dust, creating an environment for mold spores to thrive. Additionally, black stains may appear on surfaces due to the leaching of natural tannins from leaves.

Mold or Mildew

Mold growth typically results from the accumulation of organic matter on the deck surface, coupled with constant moisture and heat. Mold and mildew can impact virtually all construction materials, including plastics, composites, PVC, metals, and glass. Shaded decks and cladding are more prone to mold growth compared to those regularly exposed to UV light.

For cleaning dirty decks and cladding, Black Label™ Deck Cleaner is effective and may also help remove mildew.

Tannic acid stains, which are more stubborn, might require Black Label™ Wood Brightener. This product is often used post-cleaning to restore the wood's original color. It's important to reseal the deck immediately after using wood brighteners, as they can activate natural sugars in the wood that promote mold growth.

After applying Black Label™ Deck Cleaner or Wood Brightener, ensure you thoroughly rinse your deck. Black Label™ recommends cleaning your deck every spring and fall, or as needed.

Safety Precautions

When handling these chemicals, wear protective clothing and glasses, and avoid mixing them with ammonia or household cleaners. Test the products in small areas on a few boards before applying them widely on your project. Always follow the manufacturer's instructions when using proprietary products.

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Off Gassing

Off-gassing is the process by which VOCs (Volatile Organic Compounds) are released into the air we inhale.

The term "organic" in VOCs denotes that these chemicals contain carbon compounds that readily convert to vapor or gas. The concern with VOCs lies in their potential carcinogenic properties, which may increase cancer risk.

Common Volatile Organic Compounds

Some of the typical VOCs are:

- Formaldehyde
- Chloroform
- Phthalates
- Acetone
- Ozone
- Ethanol
- Chemical Flame Retardants
- Methylene chloride
- Benzene
- Perchloroethylene
- Nicotine
- Carbon

Natural wood products, such as those sold under the TFP and Black Label™ brands, are generally VOC-free when no adhesives, treatments, or coatings are used, with the exception of wood dust. Wood dust is considered a potential carcinogen, so appropriate respiratory protection is necessary when cutting or sanding these wood products. You can find an MSDS (Material Safety Data Sheet) on our website.

For wood adhesives, treatments, coatings, or finishes, always refer to the manufacturer's MSDS and adhere to their instructions.

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Slip-Resistence

Slip Resistance Standards for Decking

It's essential to understand that there isn't a specific standard for decking slip resistance; instead, all surfaces are assessed under the tile flooring standard.

Historical Standards: OSHA and ADA

OSHA Standard 29 CFR 1910 Subpart D / ADA (Americans with Disabilities Act)

"Slip-resistance: A reasonable measure of slip-resistance is the static coefficient of friction (COF). A COF of 0.5, based on University of Michigan studies reported in 'Work Surface Friction: Definitions, Laboratory and Field Measurements, and a Comprehensive Bibliography,' is recommended as a guide for achieving appropriate slip resistance. This COF of 0.5 is not an absolute standard. Higher COFs might be necessary for specific tasks, such as carrying, pushing, or pulling objects, or navigating ramps."

The ADA Standards for Accessible Design incorporate the OSHA Standard in "Section 4.5 Ground and Floor Surfaces:"

General Requirements:

- Ground and floor surfaces along accessible routes and in accessible areas, including floors, walks, ramps, stairs, and curb ramps, must be stable, firm, slip-resistant, and comply with section 4.5.

Coefficient of Friction Requirements: (Appendix A4.5.1)

- The Occupational Safety and Health Administration recommends a static coefficient of friction of 0.5 for walking surfaces.

Testing Methods:

- The standard methods for determining the Static Coefficient of Friction, ASTM 1678 and ASTM 1679, were withdrawn in 2005 and 2006, respectively. They were replaced by ASTM C1028, which was also withdrawn in 2014 without replacement. None of these methods addressed the Dynamic Coefficient of Friction (walking slip-resistance

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- Static Friction measures the resistance between stationary surfaces (friction when standing).
- Dynamic Friction measures the resistance between surfaces in motion relative to each other (friction while walking).

Static Friction Ratings:

- High Traction: SCOF of 0.6 or above
- Moderate Traction: SCOF between 0.4 and 0.6
- Low Traction: SCOF below 0.4

Dynamic Friction Ratings:

- High Traction: DCOF of 0.42 or above
- Low Traction: DCOF below 0.3

Compliance of Black Label™ Decking with IBC Standards
Black Label™ Ipe Decking Products have been evaluated according to ANSI B101.1 for Wet Static Coefficient of Friction (SCOF) and ANSI A137.1 section 9.6 for Dynamic Coefficient of Friction (DCOF) to ensure compliance with current IBC standards.

Test Results for Black Label™ Decking:
Testing conducted on Black Label™ decking products in wet conditions yielded the following:

- Average Static Coefficient of Friction (Wet): 0.73 (High Traction)
- Average Dynamic Coefficient of Friction (Wet): 0.45 (High Traction)

Comparing Smooth and Grooved Decking Surfaces

A frequently asked question is whether grooved decking surfaces are more slip-resistant than smooth ones. While grooved surfaces might appear to offer better traction, they actually provide less grip than smooth surfaces. This is because the grooves reduce the amount of contact between the decking and the sole of a shoe.

This was recently confirmed by testing conducted by a well-known theme park, which compared the slip resistance of smooth and grooved decking for their bridge decks.

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Grooved Surfaces and Slip Resistance

Grooved surfaces often accumulate dirt, food particles, and other organic materials. When these substances mix with water and heat, they can promote fungal growth, which further diminishes the surface's slip resistance. Therefore, maintaining cleanliness on walking surfaces is crucial.

Anti-slip granular surfaces, such as those found in anti-slip strips, enhance friction by gripping into the shoe's sole, offering increased traction. Applying such products can improve slip resistance.

Important Note: Meeting the minimum coefficient of friction requirements does not guarantee slip prevention. Factors such as the area of shoe contact, the shoe sole material and its wear, the individual's condition at the time of slipping, surface incline, and drainage conditions all affect slip resistance. Designers must assess the suitability of the surface material based on the specific application and conditions.

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Understanding Static Electricity and Decking Comfort

A Static Electricity and Material Charge

All materials have a tendency to either donate or accept electrons, resulting in a positive or negative charge.

Static electricity occurs when electrically charged particles accumulate on the surface of a material. This happens when a positively charged material comes into contact with a negatively charged one. Different materials generate varying amounts of static electricity when mixed.

We often experience static electricity, such as when walking on a wool carpet with nylon socks.

The Triboelectric Series ranks materials based on their ability to generate static electricity through friction with another material, indicating the charge they will carry.

Relatively Neutral Materials:
Few materials do not easily attract or donate electrons when in contact with other substances. Examples include:

- Cotton
- Steel
- Rubber
- Natural wood

Negatively Charged Materials:
Materials that tend to attract electrons include:

- Wood treated with preservatives containing nickel
- Copper
- Brass
- Silver

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- Gold
- Platinum
- Polyester
- Styrene (Styrofoam)
- Polyurethane
- Polyethylene (used in composite decking)
- Polypropylene (used in composite and recycled plastic decking)
- Vinyl/PVC (used in PVC decking)
- Silicon
- Teflon™

Positively Charged Materials:
Materials that tend to give up electrons include:

- Wool
- Nylon
- Glass
- Human hair and skin
- Fur
- Lead
- Silk
- Aluminum
- Leather

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Importance in Decking Material Selection:

Choosing decking materials based on their static electricity properties is crucial. When a neutral material like natural wood is paired with either a positively or negatively charged material, there is no potential for static discharge.

However, combining a negatively charged composite, plastic, or PVC decking with a positively charged material like human skin can lead to static electrical discharge or shock.

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Strength, Durability, Shrinkage Species Comparison

Strength and Durability Characteristics of Typical Residential and Commercial Decking Woods.

SPECIES	*Approximate Weight per MBF at 10% MC*	*Modulus of Rupture (psi)*	*Modulus of Elasticity (1000 psi)*	*Maximum Crushing Strength (psi)*	*Side Hardness (lbs)*	*Shear (psi)*
Ipe	6,400	25,400	3,140	13,010	3,680	2,060
Cumaru	6,300	24,800	3,050	12,200	3,200	1,980
Massaranduba	6,400	27,300	3,450	11,640	3,190	2,500
TigerWood	4,600	20,120	2,390	10,320	1,850	1,960
Purpleheart	4,800	21,300	2,420	11,380	2,060	1,830
Angelim Pedra	4,400	17,600	2,050	8,990	1,720	2,010
Southern Yellow Pine	3,100	14,200	1,880	7,750	750	1,490
California Redwood	2,600	7,900	1,100	5,220	420	1,110
Western Red Cedar	2,500	7,500	1,110	4,560	350	990

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Moisture-Related Shrinkage, Expansion, and Stability

SPECIES	*Shrinkage Radial to Grain*	*Shrinkage Perpendicular to Grain*	*Differential Shrinkage*	*Volumetric Shrinkage*	*Stability Ranking*
Ipe	6.6%	8.0%	1.4%	14.1%	#1
Cumaru	5.4%	8.4%	3.0%	13.3%	#6
Massaranduba	6.3%	9.4%	3.1%	15.1%	#8
TigerWood	4.0%	7.6%	3.6%	11.3%	#7
Garapa	6.5%	10.0%	3.5%	15.9%	#11
Purpleheart	3.2%	6.1%	2.9%	9.1%	#2
Angelim Pedra	4.4%	7.1%	2.7%	11.2%	#3
Bankirai, Yellow Balau	4.5%	8.3%	3.8%	12.4%	#9
Red Balau	4.8%	8.8%	4.0%	13.2%	#10
Dark Red Meranti	3.4%	6.6%	3.2%	9.8%	#5
Cambara	4.2%	9.1%	4.9%	12.9%	#14
Southern Yellow Pine	4.8%	7.4%	2.6%	11.8%	#4

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