Creating Water Resistant Wood Solutions

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Driving Question

How can wood be implemented into the Georgia pool market targeting a niche style of building in order to revolutionize the local pool industry?

Goals

- Find real world examples and inspirations
- Gather data on aesthetics, lifespan, chemical interactions, and price
- Create research paper with data and findings
- Present findings to a client
- Create a Cad design of wood decking being used

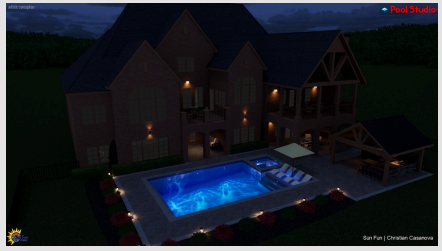
Real World Inspirations

This use of submerged wood is nothing new, Vikings pioneered this technology! Known for having the strongest ships, they used oak with a combination of tar to create a primitive sealant to help combat the rough salty seas, with ships that would last years. Currently in Alaska, Lake Hood Seaplane Base sees around 190 flights per day. The majority of its docking and floating infrastructure is wood based, which is preferred because it resists freezing damage better than metal and concrete.

Feedback

- Solid Definitive Research
- 15 - 30 year Lifespan
- Saltwater/chemicals
- Practical Implementation
- Marketing to Clients

CAD Rendering



Durability/Lifespan

The woods that lasted the longest had high oil content and silica, making them resistant to water absorption. Other woods were extremely dense or had compounds that made them combat decay and pests. Due to the high demand for this quality of wood, it comes at a high cost and has limited availability since it needs to be grown, harvested, and treated. Additionally, the dense and oily nature of the wood makes it hard to cut through and shape without expensive tools.

Data and Findings

There are many trade-offs in wood selection, balancing cost, durability, and maintenance requirements. Teak and Ipe offer exceptional longevity and resilience, making them top choices, though their high price limits accessibility. Cypress and White Oak provide a more budget-friendly alternative while having solid durability, making them viable for long-term use. While salinity is an enormous factor as it cuts the lifespan in half for almost all the woods.

Wood Type	Salt Water Resistance	Key Effects	Recommended Protection	Estimated Lifespan in Saltwater	Estimated Lifespan in Freshwater
Teak	High	Naturally resistant due to oils; minimal degradation	Periodic oiling for maintenance	50+ years	100+ years
Ipe	Moderate-High	Very dense; surface wear over time	Sealing to reduce salt exposure	30-50 years	50+ years
Black Locust	Moderate	Rot-resistant, but high salinity may degrade it	Protective coatings recommended	20-40 years	50+ years
Cypress	Moderate-High	Naturally oils resist salt water; may need sealing	Water-repellent sealers for longevity	20-40 years	30-50 years
White Oak	Moderate	Tight grain slows water absorption, but salt can break it down	Marine-grade sealant suggested	15-30 years	20-50 years
Cedar (Western Red, White)	Moderate	Moisture-resistant but salt accelerates decay	Regular sealing and maintenance	10-25 years	30-50 years
Treated Pine	Depends on treatment	Higher-grade treatments withstand saltwater; untreated pine degrades quickly	Use high-level pressure treatment for marine exposure	10-30 years	20-40 years

Wood Type	Color & Appearance	Grain Pattern	Aging/Weathering	Texture	Overall Appeal
Teak	Golden-brown, darkens over time	Straight grain	Silvers if untreated	Smooth, oily	Luxurious, classic, high-end
Ipe	Deep brown to reddish	Fine, tight grain	Turns silver-gray if not oiled	Very smooth, dense	Rich, elegant, exotic
Black Locust	Yellowish-brown to golden	Interlocked, wavy grain	Fades to gray if not sealed	Medium-coarse	Rustic, natural
White Oak	Light to medium brown	Straight, uniform grain	Darkens slightly with age	Smooth	Traditional, timeless
Cypress	Pale yellow to reddish-brown	Fine, straight grain	Develops gray patina	Smooth	Warm, earthy

Wood Type	Cost per Board Foot ($)	Availability	Maintenance Costs	Overall Value
Teak	$30–$50	Rare, high demand	Low (oiling recommended)	Expensive but premium longevity
Ipe	$10–$20	Moderately available	Low (minimal maintenance)	Great durability for cost
Black Locust	$5–$10	Readily available	Low	Budget-friendly alternative to tropical woods
White Oak	$5–$15	Widely available	Moderate (sealing recommended)	Affordable, solid performance
Cypress	$4–$12	Moderate availability	Moderate (occasional sealing)	Good balance of cost and durability

Conclusion

To sum it up, implementing water resistant wood in the pool industry revolves around strategic material selection, treatment methods, and industry integration. First, choosing the right wood species—balancing durability, cost, and availability. Establishing reliable supplier partnerships ensures consistent quality and supply. Proper treatment methods, such as oil-based finishes, sealants, and specialized coatings, extend longevity and minimize maintenance needs. Given the density of waterproof woods, installation may require specialized tools and expertise to preserve structural integrity. Finally, engaging architects, designers, and industry professionals who showcase water resistant wood, alongside well-planned marketing strategies highlighting sustainability and durability, will accelerate implementation while informing consumers.

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