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FOREST PRODUCTS LABORATORY

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COMPARATIVE DECAY RESISTANCE OF HEARTWOOD OF DIFFERENT NATIVE SPECIES WHEN USED UNDER CONDITIONS THAT FAVOR DECAY

Wood kept constantly dry or continuously submerged in water does not decay. A large proportion of the wood in use is kept so dry at all times that it lasts indefinitely. Moisture and temperature are the principal factors which affect the rate of decay; they vary greatly with the local conditions surrounding the wood in service.¹ When exposed to conditions that favor decay, wood in warm humid areas of the United States decays more rapidly than in cool or dry areas. High altitudes are as a rule less favorable to decay than low because the average temperatures are lower and the growing seasons for fungi are shorter.

The natural decay resistance of all common native species of wood is in the heartwood. When untreated, the sapwood of practically all species has low decay resistance and generally short life under decay-producing conditions. The decay resistance or durability of heartwood in service is greatly influenced by differences in the character of the wood, the attacking fungus, and the conditions of exposure. Therefore a widely different length of life may be obtained from pieces of wood that are cut from the same species or even the same tree and used under apparently similar conditions.

¹Report R68, entitled "Factors Which Influence the Decay of Untreated Wood in Service and the Comparative Decay Resistance of Different Species," discusses this matter in more detail. Copies of the report may be obtained, without charge, from the Forest Products Laboratory, Madison 5, Wis.

General comparisons of the relative decay resistance of different species must be estimates. They can not be exact and they may be very misleading if understood as mathematically accurate and applicable to all as approximate averages only, from which specific cases may vary considerably, and as having application only where the wood is used under conditions that favor decay. The following tabulation of common native species in groups according to the decay resistance of the heartwood is subject to the limitations mentioned:

<u>High</u>	<u>Intermediate</u>	<u>Low</u>
Baldcypress	Douglas-fir ²	Ashes ²
Catalpas	Honeylocust ²	Aspens
Cedars	Larch, western	Basswood
Chestnut	Oak (white oak group)	Beech ²
Junipers		Birches ²
Locust, black	Pine, eastern white	Cottonwood
Mesquite	Pine, southern yellow	Firs (true)
Mulberry, red	Sassafras	Hemlocks ²
Osage-orange	Sweetgum	Maple, sugar ²
Redwood	Tamarack	Oak (red oak group) ²
Walnut, black		Spruces ²
Yew, Pacific		Tupelo
		Willows
		Yellow-poplar ²

²These species may rate nearly as high in decay resistance as those in the next higher group.