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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.

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 cases. They may be very useful, however, if understood 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;

¹Report No. 68, 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.

Resistant or
very resistant

Baldcypress
(old growth)
Catalpa
Cedars
Cherry, black
Chestnut
Cypress, Arizona
Junipers
Locust, black²
Mesquite
Mulberry, red²
Oak, bur
Oak, chestnut
Oak, Gambel
Oak, Oregon white
Oak, post
Oak, white
Osage-orange²
Redwood
Sassafras
Walnut, black
Yew, Pacific

Moderately
resistant

Baldcypress
(young growth)
Douglas-fir
Honeylocust³
Larch, western
Oak, swamp chestnut
Pine, eastern white
Pine, longleaf
Pine, slash
Tamarack

Slightly or
nonresistant

Alder
Ashes
Aspens
Basswood
Beech
Birches
Buckeye³
Butternut
Cottonwood
Elms
Hackberry
Hemlocks
Hickories
Magnolia
Maples
Oak (red and black
species)³
Pines (most other
species)³
Poplar
Spruces
Sweetgum³
Sycamore
Willows
Yellow-poplar

²These woods have exceptionally high decay resistance.

³These species, or certain species within the groups shown, are indicated to have higher decay resistance than most of the other woods in their respective categories.