(239)

Assessment of the Natural Durability of Timber Species Through Graveyard Method

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Abstract

The natural durability of timber may be defined as inherent resistance of timber to attack by wood deterioration agents such as wood decaying fungi and wood destroying insects. Classification of wood durability can be done using different test methods and durability classes of the tested timbers can be differed due to the tested materials, applied test, assessment, and calculation method. Wood durability and the effectiveness of wood preservatives are determined using graveyard method according to BS EN 252 standard. In the present ongoing study, four natural durability classes were identified as very durable class (>10 years), durable class (5-10 years), moderately durable class (2-5 years) and not durable class (0-2 years). With the purpose of durability classification, selected 48 timber species were tested by using the graveyard test at the State Timber Corporation, Kaldemulla Timber Complex (Latitude: 6.8059614, Longitude: 79.8758562) to test wood durability. Two adjacent plots were used to conduct research with 5 replicates in each species. Those were 240x240 cm^2 and 180x240 cm^2 in size. A test stake was considered to have reached the end of its useful service life when 50% of its cross-sectional area was destroyed. These results may vary due to environmental factors such as the type of soil, rainfall, and weathering condition which may affect the biodegradation activities on the test specimens according to previous research data. According to the results from 10-year observation period, only one species falls under very durable class, it was *Diospyros ebenum* (Ebony). Whilst 17,23 and, 8 species were categorized as durable, moderately durable, and not durable (Perishable) accordingly. The data indicates that less durable timber species such as Ahu, Albizia, Lunumidella, and Pinu*s* began to decay within four months of being buried, whereas durable and very durable species such as Kahata, Kaluwara, and Kumbuk required more than three years to exhibit signs of decay. It shows that graveyard test requires longer period (more than 3 years) to conclude the durability classes of timber species.

Keywords: *Field test, Graveyard method, Natural durability, Wood decay*