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Wood Densities of Tropical Tree Species

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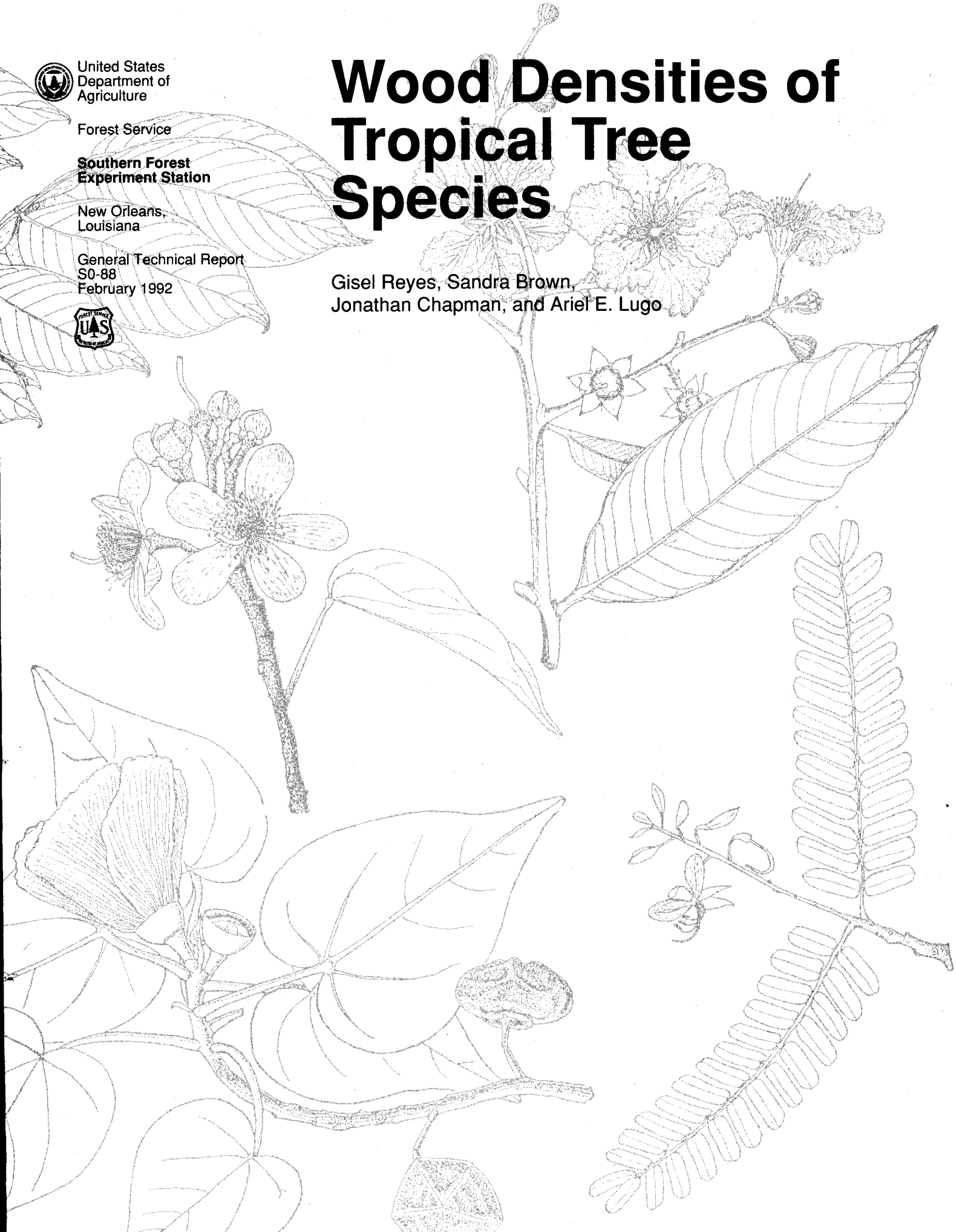

SUMMARY

Wood density information for a large number of tropical tree species is presented in units of ovendry weight in grams per cubic centimeter of green volume. The data base includes 1,280 entries from tropical America (40 percent), tropical Asia (36 percent), and tropical Africa (24 percent). The most frequent wood densities were 0.5 to 0.8 g/cm^3. In all three tropical continents, the most frequent class was the 0.5 to 0.6 g/cm^3. These data are useful for a wide variety of practical and scientific applications, including the estimation of forest stand biomass from wood volume data.

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INTRODUCTION

Information on the biomass of tropical forests is critical in order to answer many questions on the role of these forests in global phenomena, including the global carbon and other nutrient cycles, and on the magnitude of the global wood resources.

The biomass of tropical forests has been measured for a few sites scattered around the tropical world, but the area represented by these studies is extremely small (<30 ha) compared with the total area of tropical forests (about 18 million km^2) (Brown and Lugo 1982). Furthermore, there is strong evidence that the selection of these few sites was biased toward high biomass forests (Brown and Lugo 1984). A vast quantity of forest inventory data is available for the tropics. These data often report stand and stock tables (number of trees per unit area and volume per unit area, respectively) by diameter class or total volume for areas that are representative of thousands of hectares of forests. The data are useful for estimating forest biomass by a variety of techniques (Brown and others 1989; Gillespie and others in press).

To use forest inventory data for biomass estimation, wood density values for species or species groups are often needed. For example, the product of gross commercial volume and wood density, by species or species groups, gives the biomass of the commercial wood. Total biomass can then be estimated using biomass expansion factors (total biomass/commercial wood biomass) as reported in Brown and others (1989). Wood density data may also be useful for the study of forest structure and response to environmental factors (e.g., Chudnoff 1984). However, Chudnoff's (1984) analysis of patterns in wood densities of tropical trees according to life zone was not conclusive because the data base was small. Weaver (1987) demonstrated that the average wood density of montane forest stands in Puerto Rico increased with increasing age of the stand. Similar analyses for other ecologically contrasting conditions are not possible because wood density data are normally not readily available to ecologists and foresters.

In studies of tropical forest biomass (Brown and Lugo 1982, 1984; Brown and others 1989; Lugo and others 1988), a large data base has been assembled on wood density of tropical tree species. Because wood volume data, as reported in forest inventories, are given in units of green volume, and because volumes needed to be converted to oven dry weights, wood density is reported in ovendry weight grams per cubic centimeter of green volume. This information is summarized here to help others in need of it. Readers are encouraged to make the authors aware of additional sources of information so that the data base can be updated and disseminated periodically. The information is stored at the Institute of Tropical Forestry and can be obtained from the senior author.

METHODS

The list of species for which wood densities were gathered is based on the species encountered in inventories of the following regions and countries:

1. Tropical America
   a. Lowland moist forests of Brazil
   b. Lowland to upland and wet, moist, and dry forests (as described in Holdridge 1967) of Venezuela
   c. Guyana
   d. Surinam
2. Tropical Asia
   a. Malaysia
   b. Sri Lanka

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c. Tropical forest regions of east India

3. Tropical Africa

a. Cameroon
b. Gabon

The sources used for wood densities are listed by each region (table 1). Difficulties were encountered in finding sufficient wood density data in the desired units for forests of tropical Africa and Asia. Most of the data for these regions were in lb/ft^3 volume at 12-percent moisture (air-dry weight). Because of this limitation, a regression equation was developed using data in Chudnoff (1984) for wood density with volume at 12-percent moisture versus wood density at green volume. There were no significant differences among the regression equations for the three tropical regions; thus, only the equation based on all species is used. The regression equation, based on data for 379 trees, is as follows:

$$Y = 0.0134 + 0.800X \ (r^2 = 0.988)$$

where

Y = wood density at ovendry weight/green volume; g/cm^3

X = wood density at air-dry weight/volume at 12-percent moisture; g/cm^3

All density data adjusted by this regression equation are indicated in the data set (table 2) with an asterisk (*).

RESULTS AND DISCUSSION

Table 2 lists the species as identified in the original source and the reported wood density (g/cm^3) for each species. All values cited in the sources (table 1) are reported without comment, although age of tree from which the sample was derived may be a factor for differences between bibliographic sources for the same species (indicated by a plus sign [+] in table 2). However, it is likely that most determinations are based on mature trees.

There are a total of 1,180 species listed in table 2. Tropical Asia, tropical America, and tropical Africa are represented, respectively, by 428, 470, and 282 species or 36, 40, and 24 percent of the record.

The data set is summarized in figure 1 according to continent and frequency of occurence of wood density classes. The most frequent wood densities are the 0.4 to.0.8 g/cm^3 classes. The 0.5 to 0.6 class is dominant in the data sets of all three continents. The wood density of trees in the tropical America data set were more evenly distributed across four classes (0.4-0.5 to 0.7-0.8). This data set has the broadest range of wood densities (0.1 to 1.0) and the highest frequency of dense wood (>0.8); however, this range may be partly due to the larger data set for this region.

The patterns in figure 1 most likely reflect the smallness and bias of the sources toward commercial forests and species. Clearly, more data of this type are needed before conclusions regarding the ecological meaning of the patterns can be reached.

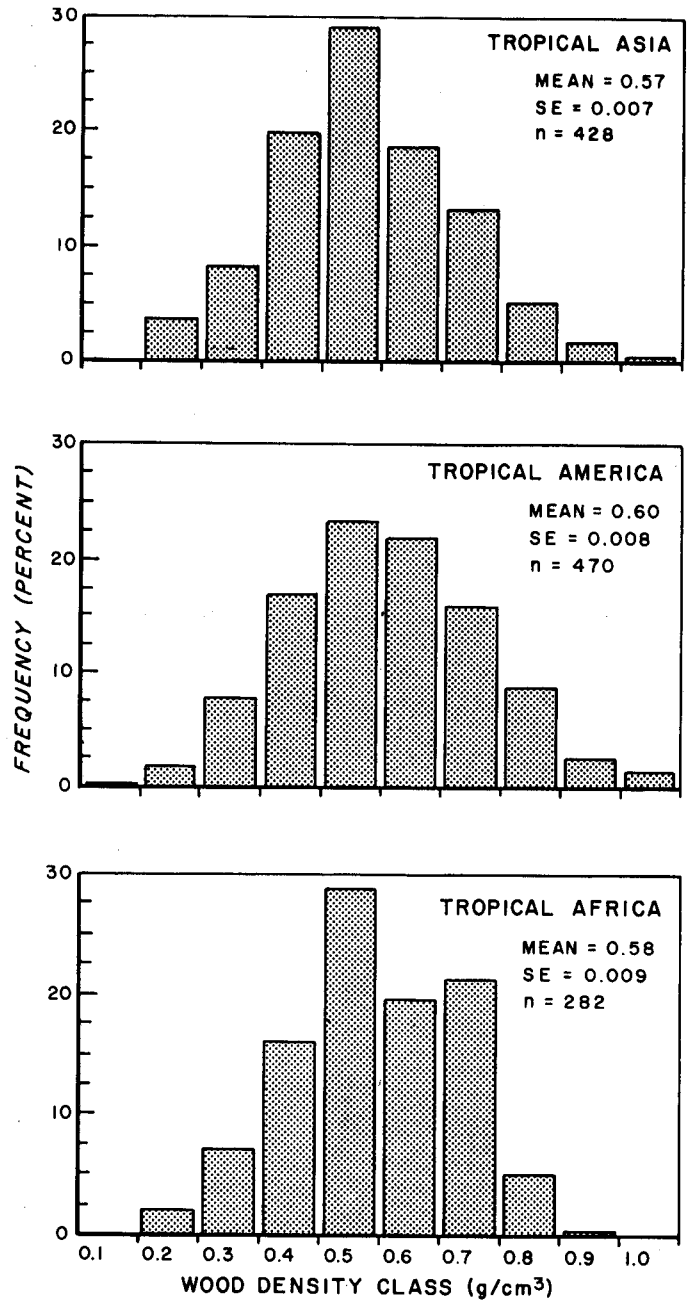

Figure 1.—*Frequency distribution of tropical forest species by wood density class for three tropical regions encompassing parts of nine tropical countries.*

Table 1.—*Sources of wood density data bv tropical region*

Asia

Alston, A.S. 1982. Timbers of Fiji: properties and potential uses. Suva, Fiji: Department of Forestry. 183 p.

Chowdhury, K.A.; Gosh, S.S. 1958. Indian woods: their identification, properties, and uses. Dehra Dun, India: Manager of Publications. 304 p. Vol. 1-2.

Chudnoff, Martin. 1984. Tropical timbers of the world. Agric. Handb. 607. Washington, DC: U.S. Department of Agriculture. 464 p.

Food and Agriculture Organization. 1980. Guidelines for the improved utilization and marketing of tropical wood species. Laguna, Philippines: Forest Products Research and Industries Development Commission (FORPRIDECOM), National Science Development Board. 153 p.

Howard, L.A. 1951. A manual of the timbers of the world: their characteristics and uses. London: MacMillan. 751 p.

Singh, K.D. 1978. Informations on the industrial raw material catchments for pulp and paper (unpublished report for the Hindustan Paper Corp., personal communication, March 1987, on file with the wood density data for regions of Southeast Asia).

Trotter, H. 1944. The common commercial timbers of India and their uses. Dehra Dun, India: Vasant Press. 289 p.

America

Berni, C.A.; Bolza, E.; Christensen, F.J. 1979. South American timbers: the properties, uses and characteristics of 190 species. Ivory House, Melbourne, Australia: Commonwealth Scientific and Industrial Research Organization, Division of Building Research. 229 p.

Chudnoff, Martin. 1984. Tropical timbers of the world. Agric. Handb. 607. Washington, DC: U.S. Department of Agriculture. 464 p.

Dickinson, F.E.; Hess, R.W.; Wangaard, F.F. 1949. Properties and uses of tropical woods, I. Tropical Woods 95. 145 p.

Fonseca Coelho, F. de J.; de Castro Ferreira, H.; Barros-Silva, S. [and others]. [n.d.] Estudo fitoecologico—as regioes fitoecologicas, sua natureza e seus recursos economicos. Folha SA. 211-Santarem. Vegetacao 4: 311– 405.

Gonzales T., M.E.; Gonzalez T.,G.E. 1973. Propiedades fisicas, mecanicas, usos, y otras caracteristicas de algunas maderas comercialmente importantes en Costa Rica. Parte I. San Pedro, Costa Rica: Laboratorio Nacional de Productos Forestales. 51 p.

Hess, R.W.; Wangaard, F.F.; Dickinson, F.E. 1950. Properties and uses of tropical woods, II. Tropical Woods 97. 132 p.

Hoheisel, H.; Karstedt, P. 1967. Identification of Ecuadorian wood species for possibilities of utilization on basis of technological results. Merida, Venezuela: Latin-American Forest Research and Training Institute, National Forest Products Laboratory. 34 p.

Hoheisel, H.; Karstedt, P.; Londono, A. 1968. Identification of some Colombian wood species and their possible use on the basis of physical and mechanical properties. Merida, Venezuela: Latin-American Forest Research and Training Institute. 60 p.

Howard, L.A. 1951. A manual of the timbers of the world: their characteristics and uses. London: MacMillan. 751 p.

Instituto Brasileiro de Desenvolvimento Florestal. 1981. Madeiras da Amazonia. Caracteristicas e utilizacao. Floresta Nacional da Tapajos. Brasilia, Brazil: Conselho Nacional de Desenvolvimento Cientifico e Tecnologico. 113 p. Vol. 1.

Table 1—*Sources of wood density data by tropical region—(Continued)*

Ladrach, W.E. 1951. Recapitulation of the taxonomy band establishment of a wood library of commercial species for the region of Bajo Calima. In: Ladrach, W.E., ed. Forest Research in the Bajo Calima Concession. Ninth Annual Report. Cali, Colombia: Carton de Colombia: 17– 38.

Longwood, Franklin. R. 1961. Puerto Rican woods. Agric. Handb. 205. Washington, DC: U.S. Department of Agriculture. 98 p.

Ministerio de Agricultura y Cria. 1969. Estudio tecnologico de 144 maderas de 1a Guyana Venezolana. Merida, Venezuela: Ministerio de Agricultura y Cria, Universidad de los Andes. Laboratorio Nacional de Productos Forestales.

Ministerio de Agricultura y Cria. 1970. Estudio tecnologico de las maderas de los Llanos Occidentales, (Primera Parte). Merida, Venezuela: Ministerio de Agricultura y Cria, Universidad de los Andes. Laboratorio Nacional de Productos Forestales. 94 p.

Ministerio de Agriculura y Cria. 1972. Estudio tecnologico de 104 maderas de los Altos Llanos Occidentales. Merida, Venezuela: Ministerio de Agricultura y Cria, Universidad de los Andes. Laboratorio Nacional de Productos Forestales. 175 p.

Ministerio de Agricultura y Cria. 1974. Caracteristicas, propiedades y usos de 104 maderas de los Altos Llanos Occidentales. Merida, Venezuela: Ministerio de Agricultura y Cria, Universidad de los Andes. Laboratorio Nacional de Productos Forestales. 106 p.

Mora, J.J.; Arroyo Perez, J. 1968. Propiedades fisicas y mecanicas de 44 maderas de la Guyana Venezolana. Publicacion 2. Merida, Venezuela: Ministerio de Productos Forestales. 9 p.

Record, S.J.; Mell, C.D. 1924. Timbers of tropical America. New Haven, CT: Yale University Press. 610 p.

van der Slooten, H.J.; Martinez, E.P. 1959. Descripcion y propiedades de algunas maderas venezolanas. Boletin Informativo Divulgativo. Merida, Venezuela: Instituto Forestal Latinoamericano de Investigacion y Capacitacion. Centro de Documentacion y Publicaciones. [not paged].

van der Slooten, H.J.; Cobra Fedalton, L.; Jose Lisboa, C.D. [and others]. [n.d.]. Madeiras da Amazonia. Caracteristicas e utilizacao. Floresta Nacional da Tapajos. Instituto Brasileiro de Desenvolvimento Florestal. Conselho Nacional de Desenvolvimento Cientifico e Tecnologico. Vol. 1.

Veillon, J.P. 1978. Lista de especies forestales autoctonas que forman la masa forestal de algunos bosques naturales de Venezuela. Parte I. Bosques de las llanuras al norte del Orinoco, en el norte y centro de Edo. Bolivar y de la selva nublada andina. Merida, Venezuela: Instituto de Silvicultura, Universidad de los Andes. 35 p.

Wangaard, F.F.; Muschler, A.F. 1952. Properties and uses of tropical woods, III. Tropical Woods 98. 190 p.

Wangaard, F.F.; Koehler; A.; Muschler, A.F. 1954. Properties and uses of tropical woods, IV. Tropical. Woods 99. 187 p.

Africa

Bolza, E.; Keating, W.G. 1972. African timbers: the properties, uses and characteristics of 700 species. Melbourne, Australia: Commonwealth Scientific and Industrial Research Organization, Division of Building Research. 751 p.

Chudnoff, Martin. 1984. Tropical timbers of the world. Agric. Handb. 607. Washington, DC: U.S. Department of Agriculture. 464 p.

Howard, L.A. 1951. A manual of the timbers of the world: their characteristics and uses. London: MacMillan. 751 p.

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents*

Species	Wood density
Tropical Asia	
Acacia arabica	0.70*
Acacia catechu	0.88
Acacia confusa	0.75
Acacia leucophloea	0.76
Acacia richii	0.69
Adina cordifolia	0.58, 0.59+
Aegle marmelo	0.75
Agathis dammara	0.41
Agathis spp.	0.44
Agathis vitiensis	0.45
Aglaia diffusa	0.70
Aglaia iloilo	0.53
Aglaia llanosiana	0.89
Alangium longiflorum	0.65
Alangium meyeri	0.63
Albizzia amara	0.70*
Albizzia falcataria	0.25
Albizzia lebbek	0.55, 0.66+
Albizzia odoratissima	0.76
Albizzia procera	0.52*, 0.59+
Aleurites moluccana	0.25
Aleurites trisperma	0.43
Alnus japonica	0.43
Alphitonia philippinensis	0.40
Alphitonia zizyphoides	0.50
Alphonsea arborea	0.69
Alseodaphne longipes	0.49
Alstonia macrophylla	0.62
Alstonia scholaris	0.36
Alstonia spp.	0.37
Amoora aherniana	0.58
Amoora macrocarpa	0.55
Amoora spp.	0.60
Anisophyllea zeylanica	0.46*
Anisoptera aurea.	0.53
Anisoptera spp.	0.54
Anisoptera thurifera	0.54
Anogeissus latifolia	0.78, 0.79+
Anthocephalus chinensis	0.36, 0.33+
Antidesma pleuricum	0.59
Aphanamixis cumingiana	0.58
Aphanamixis perrottetiana	0.52
Araucaria bidwillii	0.43
Artocarpus blancoi	0.43
Artocarpus heterophylla	0.60
Artocarpus lakoocha	0.53*
Artocarpus ovata	0.47
Artocarpus spp.	0.58
Azadirachta indica	0.69
Azadirachta spp.	0.52
Balanocarpus spp.	0.76
Barringtonia edulis *	0.48
Bauhinia spp.	0.67
Beilschmiedia tawa	0.58
Berrya cordifolia	0.78*
Bischofia javanica	0.54, 0.58, 0.62+
Bleasdalea vitiensis	0.43
Bombax ceiba	0.33
Bombycidendron vidalianum	0.53
Boswellia serrata	0.50
Bridelia retusa	0.50
Bridelia squamosa	0.50
Buchanania lanzan	0.45
Buchanania latifolia	0.45
Bursera serrata	0.59
Butea monosperma	0.48
Calophyllum blancoi	0.51
Calophyllum inophyllum	0.57
Calophyllum neo-ebudicum	0.50
Calophyllum obliquinervium	0.58
Calophyllum spp.	0.53
Calophyllum vitiense	0.50
Calycarpa arborea	0.53
Cananga odorata	0.29
Canarium asperum var. *asperum*	0.50, 0.60+
Canarium hirsutum forma *scabrum*	0.40
Canarium luzonicum	0.51
Canarium spp.	0.44
Canarium vanikoroense	0.54
Canarium vitiense	0.54
Canarium vrieseanum forma *stenophyllum*	0.56
Canthium monstrosum	0.42
Carallia calycina	0.66*
Cassia fistula	0.71
Cassia javanica	0.69
Cassia spectabilis	0.48
Castanopsis philippensis	0.51
Casuarina equisetifolia	0.83
Casuarina nodiflora	0.85
Cedrela odorata	0.38
Cedrela spp.	0.42
Cedrela toona	0.43
Ceiba pentandra	0.23
Celtis luzonica	0.49
Chisocheton cumingianus	0.52
Chisocheton pentandrus	0.52
Chloroxylon swietenia	0.76, 0.79, 0.80+
Chukrassia tabularis	0.57
Cinnamomum mercadoi	0.65
Cinnamomum spp.	0.43
Citrus grandis	0.59
Cleidion speciflorum	0.50
Cleistanthus collinus	0.88
Cleistocalyx operculatus	0.66
Cleistocalyx spp.	0.76
Cochlospermum gossypium+religiosum	0.27
Cocos nucifera	0.50
Colona serratifolia	0.33
Combretodendron quadrialatum	0.57
Cordia spp.	0.53
Cotylelobium spp.	0.69
Crataeva religiosa	0.53*
Cratoxylon arborescens	0.40
Cryptocarya spp.	0.59
Cubilia cubili	0.49
Cullenia excelsa	0.53

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Cynometra insularis	0.76, 0.91+
Cynometra ramiflora	0.70
Cynometra spp.	0.80
Dacrycarpus imbricatus	0.45, 0.47+
Dacrydium elatum	0.48
Dacrydium nausoriensis	0.52
Dacrydium nidulum	0.52
Dacrydium spp.	0.46
Dacryodes spp.	0.61
Dalbergia latifolia	0.75
Dalbergia paniculata	0.64
Decussocarpus philippinensis	0.50
Decussocarpus vitiensis	0.37
Degeneria vitiensis	0.35
Dehaasia triandra	0.64
Dialium spp.	0.80
Dillenia luzoniensis	0.69
Dillenia megalantha	0.69
Dillenia pentagyna	0.53
Dillenia philippinensis	0.61
Dillenia spp.	0.59
Diospyros embryopteris	0.63*
Diospyros inclusa	0.68
Diospyros melanoxylon	0.68
Diospyros mindanaensis	0.69
Diospyros nitida	0.71
Diospyros philippensis	0.81
Diospyros pilosanthera	0.80
Diospyros poncei	0.81
Diospyros pyrrhocarpa	0.60
Diospyros spp.	0.70
Diplodiscus paniculatus	0.63
Dipterocarpus caudatus	0.61
Dipterocarpus eurynchus	0.56
Dipterocarpus gracilis	0.61
Dipterocarpus grandiflorus	0.62
Dipterocarpus kerrii	0.56
Dipterocarpus kunstlerii	0.57
Dipterocarpus spp.	0.61
Dipterocarpus warburgii	0.52
Dracontomelon dao	0.52
Dracontomelon edule	0.46
Dracontomelon spp.	0.50
Dryobalanops spp.	0.61
Drypetes bordenii	0.75
Durio spp.	0.53
Durio zibethinus	0.44, 0.53+
Dyera costulata	0.36
Dysoxylum altissimum	0.42
Dysoxylum decandrum	0.51
Dysoxylum euphlebium	0.63
Dysoxylum quercifolium	0.49
Dysoxylum richii	0.49
Elaeocarpus serratus	0.40*
Emblica officinalis	0.80
Endiandra laxiflora	0.54
Endospermum macrophyllum	0.40
Endospermum peltatum	0.31
Endospermum spp.	0.38
Enterolobium cyclocarpum	0.35
Epicharis cumingiana	0.73
Erythrina fusca	0.25
Erythrina suberosa	0.32
Erythrina subumbrans	0.24
Erythrophloeum densiflorum	0.65
Eucalyptus citriodora	0.64
Eucalyptus deglupta	0.34
Eugenia spp.	0.65
Fagraea gracilipes	0.84
Fagraea spp.	0.73
Ficus benjamina	0.65
Ficus botryocarpa	0.43
Ficus minahassae	0.42
Ficus spp.	0.39
Ficus variegata	0.28
Ganua obovatifolia	0.59
Garcinia myrtifolia	0.65
Garcinia spp.	0.75
Gardenia latifolia	0.64
Gardenia turgida	0.64
Garuga pinnata	0.51
Gluta spp.	0.63
Gmelina arborea	0.41, 0.45+
Gmelina vitiensis	0.54
Gonocaryum calleryanum	0.64
Gonystylus bancanus	0.52
Gonystylus macrophyllus	0.52
Gonystylus punctatus	0.57
Grewia multiflora	0.46
Grewia tiliaefolia	0.68
Hardwickia binata	0.73
Harpullia arborea	0.62
Heritiera ornithocephala	0.68
Heritiera spp.	0.56
Heritiera sylvatica	0.77
Hevea brasiliensis	0.53
Hibiscus tiliaceus	0.57
Homalanthus populneus	0.38
Homalium spp.	0.76
Hopea acuminata	0.62
Hopea foxworthyi	0.64
Hopea plagata	0.88
Hopea spp.	0.64
Intsia bijuga	0.61, 0.68, 0.74+
Intsia palembanica	0.68
Kayea garciae	0.53
Kingiodendron alternifolium	0.48
Kleinhovia hospita	0.36
Knema spp.	0.53
Koompassia excelsa	0.63
Koompassia malaccensis	0.72
Koordersiodendron pinnatum	0.65, 0.69+
Kydia calycina	0.72
Lagerstroemia parviflora	0.62
Lagerstroemia piriformis	0.50
Lagerstroemia speciosa	0.53
Lagerstroemia spp.	0.55
Lannea coromandelica	0.54
Lannea grandis	0.50

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Leucaena leucocephala	0.64
Litchi chinensis ssp. *philippinensis*	0.88
Lithocarpus celebica	0.68
Lithocarpus llanosii	0.63
Lithocarpus soleriana	0.63
Litsea garciae	0.34
Litsea leytensis	0.35
Litsea perrottetii	0.45
Litsea spp.	0.40
Lophopetalum spp.	0.46
Macaranga bicolor	0.29
Macaranga denticulata	0.53
Madhuca fulva	0.53
Madhuca longifolia var. *latifolia*	0.74
Madhuca oblongifolia	0.53
Mallotus multiglandulosus	0.42
Mallotus philippensis	0.64
Mangifera altissima	0.55
Mangifera indica	0.52, 0.59+
Mangifera merrillii	0.52
Mangifera spp.	0.52
Maniltoa grandiflora	0.76
Maniltoa minor	0.76
Mastixia philippinensis	0.47
Melanorrhea spp.	0.63
Melia dubia	0.40
Melicope triphylla	0.37
Meliosma macrophylla	0.27
Melochia umbellata	0.25
Mesua ferrea	0.83, 0.85+
Metrosideros collina	0.70, 0.76+
Michelia platyphylla	0.51
Michelia spp.	0.43
Microcos stylocarpa	0.40
Micromelum compressum	0.64
Milliusa velutina	0.63
Mimusops elengi	0.72*
Mitragyna parviflora	0.56
Myristica castaneifolia	0.49
Myristica chartacea	0.49
Myristica gillespieana	0.49
Myristica spp.	0.53
Neesia spp.	0.53
Neonauclea bernardoi	0.62
Neotrewia cumingii	0.55
Ochna foxworthyi	0.86
Ochroma pyramidale	0.30
Octomeles sumatrana	0.27, 0.32+
Oroxylon indicum	0.32
Ougenia dalbergiodes	0.70
Palaquium fidjiense	0.48
Palaquium hornei	0.70
Palaquium lanceolatum	0.55
Palaquium luzoniense	0.45
Palaquium philippense	0.41
Palaquium spp.	0.55
Palaquium tenuipetiolatum	0.50
Palaquium vitilevuense	0.48
Pangium edule	0.50
Parashorea malaanonan	0.51
Parashorea spp.	0.44
Parashorea stellata	0.59
Paratrophis glabra	0.77
Parinari corymbosa	0.76
Parinari insularum	0.65
Parinari spp.	0.68
Parkia roxburghii	0.34
Payena spp.	0.55
Peltophorum pterocarpum	0.62
Pentace spp.	0.56
Phaeanthus ebracteolatus	0.56
Phyllocladus hypophyllus	0.53
Pinus caribaea	0.48
Pinus insularis	0.47, 0.48+
Pinus merkusii	0.54
Pisonia umbellifera	0.21
Pittosporum pentandrum	0.51
Planchonella vitiensis	0.77
Planchonia spectabilis	0.58
Planchonia spp.	0.59
Podocarpus neriifolius	0.52
Podocarpus spp.	0.43
Polyalthia flava	0.51
Polyscias nodosa	0.38
Pometia pinnata forma pinnata	0.58
Pometia spp.	0.54
Pouteria villamilii	0.47
Premna tomentosa	0.96
Pterocarpus indicus	0.52
Pterocarpus marsupium	0.67
Pterocymbium macrorater	0.47
Pterocymbium tinctorium	0.28
Pygeum vulgare	0.57
Quercus spp.	0.70
Radermachera pinnata	0.51
Salmalia malabarica	0.32, 0.33+
Samanea saman	0.45, 0.46+
Sandoricum koetjape	0.44
Sandoricum vidalii	0.43
Sapindus saponaria	0.58
Sapium luzonicum	0.40
Schleichera oleosa	0.96
Schrebera swietenoides	0.82
Semicarpus anacardium	0.64
Serialbizia acle	0.57
Serianthes melanesica	0.48
Sesbania grandiflora	0.40
Shorea agsaboensis	0.35
Shorea almon	0.42
Shorea assamica forma *philippinensis*	0.41
Shorea astylosa	0.73
Shorea ciliata	0.75
Shorea contorta	0.44
Shorea gisok	0.76
Shorea guiso	0.68
Shorea hopeifolia	0.44
Shorea malibato	0.78
Shorea negrosensis	0.44
Shorea palosapis	0.39
Shorea plagata	0.70

Table 2. —*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Shorea polita	0.47
Shorea polysperma	0.47
Shorea robusta	0.72
Shorea spp. *balau group*	0.70
Shorea spp. *dark red meranti*	0.55
Shorea spp. *light red meranti*	0.40
Shorea spp. *white meranti*	0.48
Shorea spp. *yellow meranti*	0.46
Shorea virescens	0.42
Sloanea javanica	0.53
Soymida febrifuga	0.97
Spathodea campanulata	0.25
Stemonurus luzoniensis	0.37
Sterculia ceramica	0.27
Sterculia foetida	0.47*
Sterculia urens	0.67
Sterculia vitiensis	0.31
Stereospermum suaveolens	0.62
Strombosia philippinensis	0.71
Strychnos potatorum	0.88
Swietenia macrophylla	0.49, 0.53+
Swintonia foxworthyi	0.62
Swintonia spp.	0.61
Sycopsis dunni	0.63
Syzygium cumini	0.70
Syzygium luzoniense	0.63
Syzygium nitidum	0.74
Syzygium simile	0.56
Syzygium spp.	0.69, 0.76+
Tamarindus indica	0.75
Tectona grandis	0.50, 0.55+
Teijsmanniodendron ahernianum	0.90
Terminalia arjuna	0.68
Terminalia belerica	0.72
Terminalia catappa	0.52
Terminalia chebula	0.96
Terminalia citrina	0.71
Terminalia copelandii	0.46
Terminalia foetidissima	0.55
Terminalia microcarpa	0.53
Terminalia nitens	0.58
Terminalia pterocarpa	0.48
Terminalia tomentosa	0.73, 0.76, 0.77+
Ternstroemia megacarpa	0.53
Tetrameles nudiflora	0.30
Tetramerista glabra	0.61
Thespesia populnea	0.52
Toona calantas	0.29
Trema orientalis	0.31
Trichospermum richii	0.32
Tristania decorticata	0.91
Tristania micrantha	0.89
Tristania spp.	0.80
Turpinia ovalifolia	0.36
Vateria indica	0.47*
Vatica mangachapoi	0.65
Vatica obscura	1.04*
Vatica pachyphylla	0.78
Vatica spp.	0.69
Vitex parviflora	0.70
Vitex peduncularis	0.96
Vitex spp.	0.65
Vitex turczaninowii	0.49
Wallaceodendron celebicum	0.55, 0.57+
Weinmannia luzoniensis	0.49
Wrightia tinctorea	0.75
Xanthophyllum excelsum	0.63
Xanthostemon verdugonianus	1.04
Xylia xylocarpa	0.73, 0.81+
Zanthoxylum rhetsa	0.33
Zizyphus spp.	0.76
Zizyphus talanai	0.53
Zizyphus xylopyra	0.85
Tropical America	
Albizzia caribaea	0.64
Albizzia spp.	0.52
Alcornea latifolia	0.49
Alcornea spp.	0.34
Alexa grandiflora	0.60
Alexa imperatricis	0.41, 0.51+
Alnus ferruginea	0.38
Alnus jorullensis	0.38
Anacardium excelsum	0.41
Anacardium spruceanum	0.42
Anadenanthera macrocarpa	0.86
Anadenanthera rigida	0.63
Andira inermis	0.63, 0.64+
Andira retusa	0.67
Aniba perutilis	0.50
Aniba riparia/duckei	0.62
Aniba spp.	0.38, 0.60+
Antiaris africana	0.38
Apeiba aspera	0.23
Apeiba echinata	0.36
Apeiba spp.	0.20, 0.24+
Apeiba tibourbon	0.12
Artocarpus comunis	0.70
Aspidosperma album	0.68
Aspidosperma cruentum	0.71
Aspidosperma dugandii	0.77
Aspidosperma marchravianum	0.68
Aspidosperma megalocarpum	0.71, 0.81+
Aspidosperma spp. (araracanga group)	0.75
Aspidosperma spp. (peroba group)	0.62, 0.65+
Astronium graveolens	0.75, 0.80, 0.84, 0.89+
Astronium lecointei	0.73
Bagassa guianensis	0.68, 0.69+
Banara guianensis	0.61
Basiloxylon exelsum	0.58
Beilschmiedia pendula	0.54
Beilschmiedia sp.	0.61
Berthollettia excelsa	0.59, 0.63+
Bixa arborea	0.32
Bombacopsis quinatum	0.38, 0.45, 0.51+
Bombacopsis sepium	0.39
Borojoa patinoi	0.52
Bowdichia nitida	0.77
Bowdichia spp.	0.74
Brosimum acutifolium	0.55

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Brosimum parinarioides	0.57
Brosimum potabile	0.53
Brosimum rubescens	0.73
Brosimum sp.	0.64, 0.84+
Brosimum spp. (alicastrum group)	0.64, 0.66+
Brosimum spp. (utile group)	0.43
Brosimum utile	0.41, 0.46+
Brysenia adenophylla	0.54
Buchenavia capitata	0.61, 0.63+
Buchenavia huberi	0.59, 0.79+
Bucida buceras	0.93
Bulnesia arborea	1.00
Bursera simaruba	0.29, 0.34+
Byrsonima aerugo	0.62
Byrsonima coriacea	0.64
Byrsonima coriacea var. *spicata*	0.61
Byrsonima spp.	0.61, 0.64, 0.75+
Cabralea cangerana	0.55
Caesalpinia spp.	1.05
Calophyllum brasiliense	0.51, 0.54, 0.55+
Calophyllum mariae	0.46
Calophyllum sp.	0.65
Calycophyllum candidisimum	0.67
Campnosperma panamensis	0.33, 0.50+
Carapa guianensis	0.56
Carapa sp.	0.47
Caryocar nr. *barbinerve*	0.62
Caryocar spp.	0.69, 0.72+
Caryocar villosum	0.72
Casearia arborea	0.53
Casearia guianensis	0.70
Casearia praecox	0.69*
Casearia sp.	0.62
Cassia moschata	0.71
Cassia multijuga	0.57
Casuarina equisetifolia	0.81
Catostemma commune	0.51
Catostemma spp.	0.55
Cecropia peltata	0.29, 0.30, 0.36+
Cecropia spp.	0.36
Cedrela angustifolia	0.36
Cedrela huberi	0.38
Cedrela odorata	0.43, 0.44, 0.45+
Cedrela spp.	0.40, 0.46+
Cedrelinga catenaeformis	0.41, 0.53+
Ceiba pentandra	0.23, 0.24, 0.25, 0.29+
Centrolobium paraense var. *orinocensis*	0.69
Centrolobium spp.	0.65
Cespedesia macrophylla	0.63
Chaetocarpus schomburgkianus	0.80
Chlorophora tinctoria	0.71, 0.75+
Clarisia racemosa	0.53, 0.57+
Clathrotropis brunnea	0.82
Clathrotropis spp.	0.89
Clusia rosea	0.67
Cochlospermum orinocensis	0.26
Copaifera duckei/reticulata	0.62
Copaifera officinalis	0.59
Copaifera spp.	0.46, 0.55+
Cordia alliodora	0.42, 0.47, 0.50, 0.57+
Cordia apurensis	0.66
Cordia bicolor	0.43, 0.49+
Cordia borinquensis	0.70
Cordia collococca	0.47
Cordia exaltata	0.41
Cordia fallax	0.36
Cordia goeldiana	0.50
Cordia sagotii	0.50
Cordia spp. (gerascanthus group)	0.74
Cordia spp. (alliodora group)	0.48
Cordia sulcata	0.60
Couepia sp.	0.70
Couma macrocarpa	0.50, 0.53+
Couratari pulchra	0.50, 0.54+
Couratari spp.	0.50
Couratari stellata	0.65, 0.78+
Croton xanthochloros	0.48
Cupressus lusitanica	0.43, 0.44+
Cyrilla racemiflora	0.53
Dacryodes colombiana	0.51
Dacryodes excelsa	0.52, 0.53+
Dalbergia nigra	0.68
Dalbergia retusa.	0.89
Dalbergia stevensonii	0.82
Declinanona calycina	0.47
Dialium guianensis	0.87
Dialyanthera spp.	0.36, 0.48+
Dicorynia guianensis	0.60, 0.65+
Dicorynia paraensis	0.60
Didymopanax morototoni	0.36, 0.40, 0.45+
Didymopanax pittieri	0.43
Didymopanax sp.	0.74
Dimorphandra mora	0.99*
Diplotropis purpurea	0.76, 0.77, 0.78+
Dipterix odorata	0.81, 0.86, 0.89+
Drypetes variabilis	0.69
Dussia lehmannii	0.59
Ecclinusa guianensis	0.63
Endlicheria cocvirey	0.39
Enterolobium cyclocarpum	0.34, 0.45+
Enterolobium schomburgkii	0.82
Eperua spp.	0.78
Eriotheca longipedicellatum	0.45
Eriotheca sp.	0.40
Erisma uncinatum	0.42, 0.48+
Erythrina sp.	0.23
Eschweilera amara	0.85
Eschweilera corrugata	0.66
Eschweilera grata	0.88
Eschweilera hologyne	0.76
Eschweilera odora	0.81, 0.85+
Eschweilera sagotiana	0.82
Eschweilera spp.	0.71, 0.79, 0.95+
Eschweilera subglandulosa	0.87, 0.89+
Eschweilera tenax	0.62
Eschweilera trinitensis	0.77
Eucalyptus robusta	0.51
Eugenia compta	0.68
Eugenia pseudosidium	0.62
Eugenia stahlii	0.73

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Euxylophora paraensis	0.68, 0.70+
Fagara aff. F. *martinicense*	0.41
Fagara sp.	0.57
Fagara spp.	0.69
Ficus citrifolia	0.40
Ficus sp.	0.32
Genipa americana	0.57, 0.58, 0.66+
Genipa spp.	0.75
Goupia glabra	0.67, 0.72+
Guarea chalde	0.52
Guarea spp.	0.52
Guarea trichiloides	0.51, 0.52+
Guatteria spp.	0.36
Guazuma ulmifolia	0.52, 0.50+
Guettarda scabra	0.65
Guillielma gasipae	0.95, 1.25+
Gustavia sp.	0.56
Helicostylis tomentosa	0.68, 0.72+
Hernandia sonora	0.29
Hevea brasiliense	0.49
Himatanthus articulata	0.40, 0.54+
Hirtella davisii	0.74
Humiria balsamifera	0.66, 0.67+
Humiriastrum melanocarpum	0.60
Humiriastrum procera	0.70
Hura crepitans	0.36, 0.37, 0.38+
Hyeronima alchorneoides	0.60, 0.64+
Hyeronima laxiflora	0.59
Hymenaea courbaril	0.54, 0.76, 0.77+
Hymenaea davisii	0.67
Hymenolobium excelsum	0.63
Hymenolobium sp.	0.64
Inga alba	0.53
Inga capitata	0.64
Inga coruscans	0.72
Inga floribunda	0.56
Inga ingoides	0.50
Inga laurina	0.62
Inga marginata	0.72
Inga sp.	0.49, 0.52, 0.58, 0.64+
Inga splendens	0.55
Inga vera	0.59
Iryanthera grandis	0.63
Iryanthera hostmanii	0.50
Iryanthera spp.	0.46
Jacaranda copaia	0.35
Jacaranda hesperia	0.35
Jacaranda sp.	0.55
Joannesia heveoides	0.39
Lachmellea speciosa	0.73
Laetia procera	0.68
Lecythis davisii	0.82
Lecythis ollaria	0.72
Lecythis paraensis	0.88
Lecythis sp.	0.83
Lecythis spp.	0.77
Licania aff. *micrantha*	0.86
Licania alba	0.91
Licania apetala	0.64, 0.78+
Licania densiflora	0.80
Licania hypoleuca	0.90
Licania macrophylla	0.76
Licania parviflora	0.76
Licania sp.	0.61, 0.79+
Licania spp.	0.78
Licaria cayennensis	0.99
Licaria spp.	0.82
Lindackeria sp.	0.41
Linociera domingensis	0.81
Lonchocarpus sericens	0.78
Lonchocarpus spp.	0.69
Lonchocarpus straminens	0.75
Loxopterygium sagotii	0.56
Lucuma spp.	0.79
Luehea cymulosa	0.55
Luehea spp.	0.50
Lueheopsis duckeana	0.64
Mabea piriri	0.59
Machaerium spp.	0.70
Macoubea guianensis	0.40*
Magnolia sororum	0.50
Magnolia splendens	0.59
Magnolia spp.	0.52
Maguira sclerophylla	0.57
Mammea americana	0.62
Mangifera indica	0.55
Manilkara bidentata	0.82, 0.84, 0.85+
Manilkara sp.	0.89
Marila sp.	0.63
Marmaroxylon racemosum	0.78*
Matayba domingensis	0.70
Matisia hirta	0.61
Maytenus ficiformis	0.67
Maytenus spp.	0.71
Mezilaurus itauba	0.68
Mezilaurus lindaviana	0.68
Michropholis garciniaefolia	0.64
Michropholis spp.	0.61
Minquartia guianensis	0.76, 0.79+
Mora excelsa	0.80
Mora gonggrijpi	0.80
Mora magistosperma	0.88
Mora sp.	0.77
Mouriria guianensis	0.80
Mouriria huberi	0.75
Mouriria pseudo-germinata	0.65
Mouriria sideroxylon	0.88
Myrcia paivae	0.73
Myrcia splendens	0.80
Myrciaria floribunda	0.73
Myristica spp.	0.46
Myroxylon balsamum	0.74, 0.76, 0.78+
Nectandra antillana	0.42
Nectandra concinna	0.54, 0.56+
Nectandra coriacea	0.51
Nectandra rigida	0.59
Nectandra rodioei	0.91
Nectandra rubra	0.55
Nectandra sp.	0.43, 0.48, 0.72+

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Nectandra spp.	0.52
Ocotea glandulosa	0.46
Ocotea leucoxylon	0.45
Ocotea moschata	0.61
Ocotea rodioei	0.85, 0.86+
Ocotea rubra	0.54, 0.55, 0.56+
Ocotea spathulata	0.62
Ocotea spp.	0.51
Onychopetalum amazonicum	0.64
Ormosia krugii	0.50
Ormosia lignivalvis	0.58
Ormosia spp.	0.59
Ouratea sp.	0.66
Pachira acuatica	0.43
Paratecoma peroba	0.60
Parinari campestris	0.69
Parinari excelsa	0.64
Parinari rodolfi	0.72
Parinari spp.	0.68
Parkia belutina	0.42
Parkia multijuga	0.38
Parkia oppositifolia	0.24
Parkia pendula	0.51
Parkia spp.	0.39
Peltogyne porphyrocardia	0.92
Peltogyne spp.	0.79
Pentaclethra macroloba	0.65, 0.68+
Pera glabrata	0.65
Pera schomburgkiana	0.59
Persea spp.	0.40, 0.47, 0.52+
Petitia domingensis	0.66
Pinus caribaea	0.51
Pinus oocarpa	0.55
Pinus patula	0.45
Piptadenia communis	0.68
Piptadenia macrocarpa	0.83*
Piptadenia pittieri	0.62, 0.76+
Piptadenia psilostachya	0.67
Piptadenia rigida	0.73
Piptadenia sp.	0.58
Piptadenia suaveolens	0.72
Piranhea longepedunculata	0.90
Piratinera guianensis	0.96
Pithecellobium guachapele (syn. *Pseudosamea*)	0.56
Pithecellobium saman	0.48
Platonia insignis	0.70*
Platymiscium pinnatum	0.80, 0.81+
Platymiscium polystachium	0.73
Platymiscium spp.	0.71, 0.84+
Podocarpus oleifolius	0.46
Podocarpus rospigliossi	0.40
Podocarpus spp.	0.46
Pourouma aff. *apiculata*	0.45
Pourouma aspera	0.28
Pourouma aff. *guianensis*	0.33
Pourouma aff. *melinonii*	0.32
Pouteria carabobensis	0.68
Pouteria egregia	0.89
Pouteria eugeniifolia	1.08
Pouteria gonggrijpii	0.84
Pouteria melinonii	0.63*
Pouteria multiflora	0.74
Pouteria pomifera	0.76
Pouteria sp.	0.73
Pouteria spp.	0.64, 0.67+
Prioria copaifera	0.40, 0.41+
Protium crenatum	0.54
Protium decandrum	0.56
Protium heptaphyllum	0.40, 0.55+
Protium neglectum	0.58, 0.64+
Protium sp.	0.73
Protium spp.	0.53, 0.64+
Protium tenuifolium	0.60
Pseudolmedia laevigata	0.64
Pterocarpus officinalis	0.32, 0.50+
Pterocarpus rohrii	0.41
Pterocarpus sp.	0.46, 0.50+
Pterocarpus spp.	0.44
Pterocarpus vernalis	0.59
Pterogyne nitens	0.66
Pterygota excelsa	0.58
Qualea albiflora	0.50
Qualea cf. *lancifolia*	0.58
Qualea dinizii	0.58
Qualea spp.	0.55
Quararibaea guianensis	0.54
Quercus alata	0.71
Quercus costaricensis	0.61
Quercus eugeniaefolia	0.67
Quercus spp.	0.70
Raputia sp.	0.55
Rheedia spp.	0.72
Rollinia exsucca	0.32
Rollinia sp.	0.34, 0.36+
Rollinia spp.	0.36
Saccoglottis cydonioides	0.72
Sapium biglandulosum	0.45
Sapium cf. *jenmanni*	0.41
Sapium laurocerasus	0.38
Sapium sp.	0.38, 0.48+
Sapium ssp.	0.47, 0.72+
Schinopsis spp.	1.00
Sclerobium aff. *chrysophyllum*	0.62
Sclerobium guianensis	0.56
Sclerobium paniculatum	0.34
Sclerobium spp.	0.47
Sickingia spp.	0.52
Simaba multiflora	0.51
Simarouba amara	0.32, 0.34, 0.38+
Sloanea berteriana	0.80
Sloanea grandiflora	0.80
Sloanea guianensis	0.79
Spondias lutea	0.38
Spondias mombin	0.30, 0.40, 0.41+
Sterculia apetala	0.33, 0.36
Sterculia pilosa/speciosa	0.53
Sterculia pruriens	0.46
Sterculia spp.	0.55
Stryphnodendron polystachum	0.52
Stylogyne spp.	0.69

Table 2.—*Wood densities (g/cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density
Swartzia spp.	0.95
Swietenia macrophylla	0.42, 0.45, 0.46, 0.54+
Symphonia globulifera	0.58
Tabebuia guayacan	0.82
Tabebuia heterophylla	0.58
Tabebuia heterotricha	0.82
Tabebuia pentaphylla	0.51
Tabebuia rosea	0.54
Tabebuia serratifolia	0.92, 0.95, 0.99+
Tabebuia spectabilis	1.07
Tabebuia spp. (lapacho group)	0.91
Tabebuia spp. (roble)	0.52
Tabebuia spp. (white cedar)	0.57
Tabebuia stenocalyx	0.55, 0.57+
Tachigalia myrmecophylla	0.56
Talisia sp.	0.84
Tapirira guianensis	0.47*
Terminalia amazonia	0.66
Terminalia catappa	0.59
Terminalia guianensis	0.63
Terminalia lucida	0.65
Terminalia sp.	0.50, 0.51, 0.58+
Tetragastris altisima	0.61
Tetragastris balsamifera	0.63, 0.67+
Tetragastris panamensis	0.71
Tetragastris spp.	0.71
Toluifera balsamum	0.74
Torrubia cuspidata	0.47
Torrubia sp.	0.52
Toulicia pulvinata	0.63
Tovomita guianensis	0.60
Trattinickia burserifolia	0.44
Trattinickia rhoifolia	0.37
Trattinickia sp.	0.38
Trichilia propingua	0.58
Trichosperma mexicanum	0.41
Triplaris sp.	0.64
Triplaris spp.	0.56
Triplaris surinamensis	0.51
Trophis sp.	0.54
Vatairea lundellii	0.64
Vatairea spp.	0.60
Virola sebifera	0.48
Virola spp.	0.40, 0.44, 0.48+
Virola surinamensis	0.37, 0.42+
Vismia spp.	0.41
Vitex divaricata	0.62
Vitex gaumeri	0.56
Vitex orinocensis	0.53
Vitex spp.	0.52, 0.56, 0.57+
Vitex stahelii	0.60
Vochysia ferruginea	0.42, 0.47+
Vochysia guianensis	0.45
Vochysia hondurensis	0.33
Vochysia lehmannii	0.48
Vochysia maxima	0.46
Vochysia spp.	0.40, 0.47, 0.79+
Vochysia tetraphylla	0.48
Vochysia tomentosa	0.36
Vouacapoua americana	0.79
Warszewicsia coccinea	0.56
Xanthoxylum martinicensis	0.46
Xanthoxylum spp.	0.44
Xylopia columbiana	0.51
Xylopia emarginata	0.59
Xylopia frutescens	0 64*
Tropical Africa	
Afzelia bipindensis	0.66*
Afzelia pachyloba	0.63*
Afzelia spp.	0.67
Aidia ochroleuca	0.78*
Albizia ferruginea	0.47*
Albizia glaberrima	0.52*
Albizia gummifera	0.51*
Albizia spp.	0.52
Albizia zygia	0.46*
Allanblackia floribunda	0.63*
Allophyllus africanus f. *acuminatus*	0.45
Alstonia congensis	0.33
Amphimas ferrugineus	0.63*
Amphimas pterocarpoides	0.63*
Anisophyllea obtusifolia	0.63*
Annonidium mannii	0.29*
Anopyxis klaineana	0.74*
Anthocleista keniensis	0.50*
Anthonotha macrophylla	0.78*
Anthostemma aubryanum	0.32*
Antiaris africana	0.37
Antiaris spp.	0.38
Antrocaryon klaineanum	0.50*
Aucoumea klaineana	0.37
Autranella congolensis	0.78
Baillonella toxisperma	0.71
Balanites aegyptiaca	0.63*
Baphia kirkii	0.93*
Beilschmiedia corbisieri	0.63*
Beilschmiedia diversiflora	0.63*
Beilschmiedia kweo	0.56*
Beilschmiedia louisii	0.70*
Beilschmiedia membranifolia	0.50*
Beilschmiedia nitida	0.50*
Berlinia bracteosa	0.60*
Berlinia confusa	0.56*
Berlinia spp.	0.58
Blighia welwitschii	0.74*
Bombax buonopozense	0.32*
Bombax chevalieri	0.41*
Bombax rhodognaphalon	0.36*
Bombax spp.	0.40
Brachystegia cynometroides	0.56*
Brachystegia laurentii	0.45*
Brachystegia mildbraedii	0.50*
Brachystegia spp.	0.52
Bridelia grandis	0.50*
Bridelia micrantha	0.47*
Calpocalyx heitzii	0.66*
Calpocalyx klainei	0.63*
Canarium schweinfurthii	0.40*
Canthium rubrocostratum	0.63*

Table 2.—*Wood densities (g / cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density	Species	Wood density
Carapa procera	0.59	*Enantia chlorantha*	0.42*
Casearia battiscombei	0.50	*Endodesmia calophylloides*	0.66*
Cassipourea euryoides	0.70*	*Entandrophragma angolensis*	0.45
Cassipourea malosana	0.59*	*Entandrophragma candollei*	0.59
Ceiba pentandra	0.26	*Entandrophragma cylindricum*	0.55
Celtis brieyi	0.50*	*Entandrophragma utile*	0.53
Celtis mildbraedii	0.56*	*Eribroma oblongum*	0.60*
Celtis spp.	0.59	*Eriocoelum microspermum*	0.50*
Celtis zenkeri	0.59*	*Erismadelphus exsul*	0.56*
Chlorophora excelsa	0.55	*Erythrina vogelii*	0.25*
Chrysophyllum albidum	0.56*	*Erythrophleum ivorense*	0.72
Cleistanthus mildbraedii	0.87*	*Erythroxylum mannii*	0.50
Cleistopholis patens	0.36*	*Fagara heitzii*	0.41*
Coelocaryon preussii	0.56*	*Fagara macrophylla*	0.69
Cola cordifolia	0.50*	*Ficus iteophylla*	0.40*
Cola gigantea	0.46*	*Ficus mucuso*	0.39*
Cola gigantea var. *glabrescens*	0.46*	*Funtumia africana*	0.40*
Cola natalensis	0.70*	*Fumtumia latifolia*	0.45*
Cola sp.	0.70*	*Gambeya africana*	0.63
Combretodendron macrocarpum	0.70	*Gambeya lacourtiana*	0.63*
Conopharyngia holstii	0.50*	*Gambeya madagascariensis*	0.56*
Copaifera mildbraedii	0.63*	*Gambeya* spp.	0.56*
Copaifera religiosa .	0.50*	*Garcinia gerardii*	0.66*
Cordia africana	0.40*	*Garcinia mannii*	0.78*
Cordia millenii	0.34	*Garcinia punctata*	0.78*
Cordia platythyrsa	0.36*	*Gilbertiodendron dewevrei*	0.65*
Corynanthe gabonensis	0.56*	*Gilbertiodendron grandiflorum*	0.66*
Corynanthe pachyceras	0.63*	*Gilbertiodendron mayombense*	0.63*
Coula edulis	0.78*	*Gilletiodendron mildbraedii*	0.87*
Croton macrostachyus	0.50*	*Gossweilerodendron balsamiferum*	0.40
Croton megalocarpus	0.57	*Guarea cedrata*	0.48
Cryptosepalum staudtii	0.70*	*Guarea laurentii*	0.56*
Ctenolophon englerianus	0.78*	*Guarea thompsonii*	0.55*
Cylicodiscus gabonensis	0.80	*Guibourtia arnoldiana*	0.64
Cynometra alexandri	0.74	*Guibourtia demeusei*	0.70*
Dacryodes buettneri	0.53*	*Guibourtia ehie*	0.67
Dacryodes edulis	0.50*	*Guibourtia pellegriniana*	0.74*
Dacryodes igaganga	0.53*	*Guibourtia* spp.	0.72
Dacryodes klaineana	0.70*	*Guibourtia tessmannii*	0.74*
Dacryodes le-testui	0.50*	*Hannoa klaineana*	0.28*
Dacryodes normandii	0.50*	*Harungana madagascariensis*	0.45*
Dacryodes spp.	0.61	*Hexalobus crispiflorus*	0.48*
Daniellia klainei	0.45*	*Holoptelea grandis*	0.59*
Daniellia ogea	0.40*	*Homalium letestui*	0.66*
Daniellia soyauxii	0.45*	*Homalium* spp.	0.70
Desbordesia pierreana	0.87*	*Hylodendron gabonense.*	0.78*
Detarium senegalensis	0.63*	*Hymenostegia afzelii*	0.78*
Dialium bipindense	0.83*	*Hymenostegia pellegrini*	0.78*
Dialium dinklagei	0.72	*Irvingia gabonensis*	0.71
Dialium excelsum	0.78*	*Irvingia grandifolia*	0.78*
Didelotia africana	0.78*	*Julbernardia globiflora*	0.78
Didelotia brevipaniculata	0.53	*Khaya grandifoliola*	0.60
Didelotia letouzeyi	0.50	*Khaya ivorensis*	0.44
Diospyros kamerunensis	0.78*	*Khaya senegalensis*	0.60
Diospyros spp.	0.82	*Klainedoxa gabonensis*	0.87
Discoglypremna caloneura	0.32*	*Lannea welwitschii*	0.45*
Distemonanthus benthamianus	0.58	*Lecomtedoxa klaineana*	0.78*
Drypetes gossweilleri	0.63*	*Letestua durissima*	0.87*
Drypetes sp.	0.63*	*Lophira alata*	0.87*
Ehretia acuminata	0.51*	*Lovoa trichilioides*	0.45*

Table 2.—*Wood densities (g / cm³) of tree species for tropical regions of three continents—(Continued)*

Species	Wood density	Species	Wood density
Macaranga conglomerata	0.40*	*Pteleopsis hylodendron*	0.63*
Macaranga kilimandscharica	0.40*	*Pterocarpus angolensis*	0.59
Maesopsis eminii	0.41	*Pterocarpus soyauxii*	0.61
Malacantha sp. aff. *alnifolia*	0.45*	*Pterygota bequaertii*	0.56*
Mammea africana	0.62	*Pterygota* spp.	0.52
Manilkara cuneifolia	0.81*	*Pycnanthus angolensis*	0.40
Manilkara lacera	0.78*	*Randia cladantha*	0.78*
Markhamia hildebrandtii	0.50*	*Rauwolfia macrophylla*	0.47*
Markhamia platycalyx	0.45*	*Ricinodendron heudelotii*	0.20
Memecylon capitellatum	0.77*	*Saccoglottis gabonensis*	0.74*
Microberlinia bisulcata	0.63*	*Santiria trimera*	0.53*
Microberlinia brazzavillensis	0.70	*Sapium ellipticum*	0.50*
Microcos coriaceus	0.42*	*Schrebera arborea*	0.63*
Milletia laurentii	0.70*	*Sclorodophloeus zenkeri*	0.68*
Milletia spp.	0.72	*Scottellia chevalieri*	0.50*
Mitragyna ciliata	0.45	*Scottellia coriacea*	0.56
Mitragyna stipulosa	0.47	*Scyphocephalium ochocoa*	0.48
Monopetalanthus coriaceus	0.45*	*Scytopetalum tieghemii*	0.56*
Monopetalanthus durandii	0.50*	*Sindoropsis letestui*	0.56*
Monopetalanthus heitzii	0.39	*Staudtia stipitata*	0.75
Monopetalanthus letestui	0.50*	*Stemonocoleus micranthus*	0.56*
Monopetalanthus pellegrinii	0.47*	*Sterculia oblonga*	0.61
Musanga cecropioides	0.23	*Sterculia rhinopetala*	0.64
Nauclea diderrichii	0.63	*Strephonema pseudocola*	0.56*
Neopoutonia macrocalyx	0.32*	*Strombosia glaucescens*	0.80
Nesogordonia fouassieri	0.70*	*Strombosia grandifolia*	0.74*
Nesogordonia papaverifera	0.65	*Strombosiopsis tetrandra*	0.63*
Newtonia buchananii	0.48*	*Swartzia fistuloides*	0.82
Newtonia glandulifera	0.74*	*Symphonia globulifera*	0.58*
Ochtocosmus africanus	0.78*	*Syzygium cordatum*	0.59*
Odyendea gabonensis	0.32*	*Tarrietia densiflora*	0.63
Odyendea spp.	0.32	*Tarrietia utilis*	0.54*
Oldfieldia africana	0.78*	*Terminalia superba*	0.45
Ongokea gore	0.72	*Tessmania africana*	0.85*
Oxystigma oxyphyllum	0.53	*Testulea gabonensis*	0.60
Pachyelasma tessmannii	0.70*	*Tetraberlinia bifoliolata*	0.54*
Pachypodanthium confine	0.58*	*Tetraberlinia tubmaniana*	0.60*
Pachypodanthium staudtii	0.58*	*Tetrapleura tetraptera*	0.50*
Paraberlinia bifoliolata	0.56*	*Tieghemella africana*	0.55
Parinari excelsa	0.69	*Tieghemella heckelii*	0.55*
Parinari glabra	0.87*	*Trema guineensis*	0.40*
Parinari goetzeniana	0.78*	*Trema* sp.	0.40*
Parkia bicolor	0.36*	*Trichilia heudelotii*	0.50*
Pausinystalia brachythyrsa	0.56*	*Trichilia prieureana*	0.63*
Pausinystalia cf. *talbotii*	0.56*	*Trichoscypha arborea*	0.59*
Pentaclethra eetveldeana	0.63*	*Triplochiton scleroxylon.*	0.32
Pentaclethra macrophylla	0.78*	*Uapaca* spp.	0.60
Pentadesma butyracea	0.78*	*Vepris undulata*	0.70*
Phyllanthus discoideus	0.76*	*Vitex doniana*	0.40
Pierreodendron africanum	0.70*	*Xylopia aethiopica*	0.50*
Piptadenia gabunensis	0.70*	*Xylopia chrysophylla*	0.70*
Piptadeniastrum africanum	0.56	*Xylopia hypolambra*	0.63*
Plagiostyles africana	0.70*	*Xylopia quintasii*	0.70*
Poga oleosa	0.36	*Xylopia staudtii*	0.36*
Polyalthia suaveolens	0.66*		
Premna angolensis	0.63*		

+The wood densities specified pertain to more than one bibliographic source.
* Wood density value is derived from the regression equation given in the text.

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Wood densities of a number of tree species for tropical America, tropical Asia, and tropical Africa have been compiled.

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