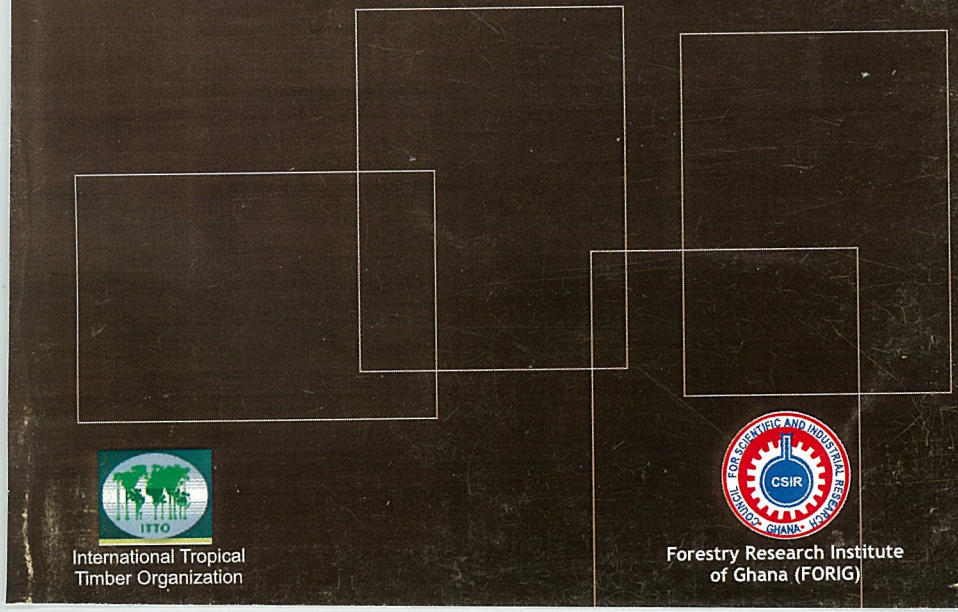
GHANA STANDARDS BOARD

GHANA STANDARD GS 983:2009

Furniture - Specifications for FURNITURE COMPONENTS



International Tropical Timber Organization

Forestry Research Institute of Ghana (FORIG)

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Furniture - Specification for FURNITURE COMPONENTS

ICS 97.140 Ref. No. GS 983:2009

Furniture- Specification for Furniture Components

1.0 Scope

This Ghana Standard for furniture components establishes the general rules for the classification and grading of furniture components. This standard further spells out the requirements for machined wood products intended for general application in furniture and similar products.

1.1 Field of Application

This Ghana Standard is applicable to tropical timber manufactured through processes of machining and sold as furniture components or items which have been identified with specific end use under various descriptions.

It is intended for use by timber merchants, specifiers, contractors, manufacturers, regulatory bodies, researchers, suppliers, wholesalers, retailers, and other stakeholders.

2.0 Normative Reference

The following referenced document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.1 International Standards for Phytosanitary Measures, ISPM No. 15, 2003

3.0 Definitions

For the purpose of this Standard, the following definitions shall apply:

3.1 blemish
anything marring the appearance of timber but not serious enough to be classed a defect,

3.2 blue stain
a form of sap stain producing a bluish appearance.

3.3 borer holes
holes and channels created in wood by insects or their larvae.

3.4 bright sapwood
sapwood that is not stained.

3.5 bow
curvature of a piece of sawn timber in the direction of its length measured at the point of greatest depth.

3.6 check
small separation of wood fibers in a longitudinal direction not penetrating as far as the opposite or adjoining side.

3.7 chipped grain
imperfections in surface of a piece caused when particles of wood are chipped or broken below the line of cut.

3.8 clear wood
wood free from all visible defects and imperfections.

3.9 compression failure
fracture across the grain in which the wood fibers are broken transversely or crushed by compression.

3.10 cup
curvature of a piece of sawn timber across its width measured at the point of greatest depth.

3.11 decay
decomposition of wood substance by fungi.

3.12 defect
any irregularity in timber that lowers its strength, durability or utility.

3.13 discoloration
stain in any color other than the natural color of the piece on which it appears.

3.14 dressed timber
sawn timber planed or otherwise machined on one or more surfaces. Also referred to as surfaced timber or planed timber.

3.15 edge
narrow face of a rectangular shaped piece of timber or corner of a piece at the intersection of two longitudinal faces

3.16 face
the two wider surfaces of a piece of sawn timber.

3.16.1 better face
face with the fewest defects

3.16.2 worst face
face with the worst defects

3.17 grub hole
borer hole above 3 mm in diameter usually averaging 4 mm which is caused by long horn beetles.

3.18 hit and miss
a series of skips not over 1, 5 mm deep with surfaced areas in-between.

3.19 kiln
a room, chamber or building where temperature, humidity and air circulation are suitably controlled to dry wood to a specific moisture content.

3.20 kiln dried lumber
lumber that has been dried in a kiln to a moisture content of maximum 18%.

3.21 knot
basal portion/part of a branch that is embedded in the stem of a tree. It is usually round or oval in shape depending on the cross-sectional shape of the enclosed branch.

3.22 arris knot
knot emerging on an arris.

3.23 pin knot
knot which does not exceed 4 mm in average diameter.

3.24 sound knot
knot that is solid across its face as hard as the surrounding wood and shows no sign of decay.

3.25 splay knot
knot cut approximately parallel to its long axis so that the exposed section is elongated.

3.26 machine burn
darkening of wood due to overheating by machine knives or rolls when pieces are stopped in the machine.

3.27 mouldings
lumber which have been dressed or machined and usually shaped to a profile that is no longer square or rectangular

3.28 pin hole
borer hole not over 1, 5 mm in diameter usually about 0, 75 mm or less sometimes stained around the edges.

3.29 plugs and fillers
inserts into a piece of lumber to improve its appearance and usefulness.

3.30 raised grain
unevenness between springwood and summerwood on the surface of dressed lumber.

3.31 resin pocket
an opening in wood which is wholly or partially filled with a solid or semi-solid gummy substance in the form of a streak between the growth rings.

3.32 sapwood
outer layer of wood adjacent to the bark.

3.33 shot hole
borer hole above 1, 5 mm in diameter but not exceeding 3 mm.

3.34 skips
an area on a piece that failed to surface.

3.35 split
length-wise separation of wood due to tearing apart of the wood cells.

3.36 spring
deviation edgewise from a straight line drawn from end to end of a piece measured at the point of greatest depth. Also known as, crook.

3.37 Surface Four Sides (S4S)
timber dressed or machined by the use of a planer or moulder to give a smooth finish on all four sides. Also known as Dressed Four Sides (D4S) or Planed All Round (PAR). The corners of S4S may be square edged or eased (E4E) as specified in the contract.

3.38 scant
any undersize in thickness or width exceeding 0, 75 mm.

3.39 timber
wood in a form suitable for construction or carpentry or joinery or for re-conversion for manufacturing purposes. Standing trees or felled trees are capable of being converted for these uses.

3.40 torn grain
blemish due to wood that has been torn or broken by surfacing.

3.41 twist
spiral distortion along length of timber expressed as its angular deviation in degrees over its length.

3.42 warp
defect in lumber characterized by bending in one or more directions

4.0 Product Types

The machined wood products covered by this standard are furniture components which include rails, backrest, legs, armrest, stretcher and tops.

5.0 General Requirements

5.1 Species of Timber

Timber for finished wood products shall be species recognized as being naturally resistant to fungal and insect attack. Perishable timber species shall be accepted when such timber is treated against fungal and insect infestation with a non-leachable preservative as directed by the manufacturer and approved by the Environmental Protection Agency (EPA).

Appendix 1 indicates the species of timber more commonly available for the manufacture of furniture components. However this list does not exclude the use of other species of timber provided they are found to be suitable for any particular purpose.

5.2 Moisture Content

Moisture content of the machined wood products shall be agreed between the buyer and seller. However:

i) for all internal applications moisture content shall be within the limits of 8 – 16% depending on type of building and heating systems

ii) for all external applications moisture content shall be within the limits of 12–18%.

5.3 Measurement

The thickness, width, diameter and length of furniture components shall be determined by using micrometer, caliper or steel tape as appropriate to an accuracy of 0, 05 mm.

5.4 Tolerance

Tolerance on furniture components shall be as follows:

Thickness: ± 0, 20 mm
Width: ± 0, 20 mm

Length: For furniture components, a tolerance of 15 mm shall be allowed. For multiple lengths, a tolerance of 10 mm shall be allowed for every unit cut.

5.5 Quantity

The quantity of furniture components may be expressed in cubic meter (m^3), square meter (m^2), running meter (m) and number of pieces where:

Running meter (m) = Sum of length of all pieces (Length of one piece (m) x Total Number of pieces)

$$\text{Surface Area } (m^2) = \text{Total Length (m)} \times \frac{\text{Width (mm)}}{10^3}$$

$$\text{Volume } (m^3) = \text{No. of pieces} \times \frac{\text{Surface Area of one piece } (m^2) \times \text{Thickness (mm)}}{10^3}$$

$$\text{Volume}(m^3) = \text{Running meter (m)} \times \frac{\text{width (mm)}}{10^3} \times \frac{\text{Thickness (mm)}}{10^3}$$

$$\text{Volume } (m^3) = \text{No. of pieces} \times \frac{\text{Area of cross section per piece } (mm^2) \times \text{Length (m)}}{10^6}$$

6.0 Classification by Grades

Furniture components produced in accordance with technical specifications are classified by appearance and defects inherent in the wood and manufacturing defects visible on the surface of the product at the time of grading.

According to appearance and defects, furniture components are classified into three main grades. These are:
Grade I
Grade II
Grade III

Table 1 gives the classification of the various furniture components by grade.

6.1 Grade I

This is the highest grade in which many of the pieces are clear and free of natural and machining defects as specified in Table 1. It is

intended for applications where the original natural colour of the wood is required after finishing.

6.2 Grade II

This grade is ordered when less demanding applications than Grade I are desired. It includes pieces that can be repaired by plugging, filling and sanding and natural or machining characteristics that are acceptable for a fine appearance.

Machined furniture components in this grade are intended for applications where they can be stained in finishing.

6.3 Grade III

This grade has many of the characteristics present in Grade II but is generally less restrictive in natural and machining characteristics. This grade is intended for low cost applications and will provide an acceptable product when it is painted with an opaque finish. Filling and sanding of characteristics are permitted. The product must however be able to perform for the use intended.

7.0 Dimensions

Furniture components are manufactured in accordance with specifications in the working drawing.

8.0 Grading Provisions for Furniture Components

Grading of furniture components shall be on the basis of allowable defects determined by grading on all exposed surfaces and edges within the limits specified in Table 1.
The unexposed face shall allow defects that do not detract from

its use and which shall be not lower than permissible in Grade III. Where machining defects such as hit and miss, scant and roller marks up to 0, 75 mm deep occur they shall not exceed more than 25% of the surface area of the unexposed face.

9.0 Species Amending Clauses

Some species have natural defects that are characteristic to them to the extent that without special consideration such species would be unduly downgraded. If such species have those specific defects they cannot be in the first grade. However they can be included in the second grade without limit. For example

i. Small internal non-active wormholes – ofram, wawa, esa
ii. Pin knots – danta, guarea, teak, sapele
iii. Exudation and resin pockets – edinam, guarea
iv. Irregular wavy/ interlocked grain – sapele, kusia, canarium. ayan, dahoma, mahogany
v. Checks – kaku, kusia, mansonia

10.0 Packaging

Furniture components shall be packed in sets or as individual components and shrink wrapped. Each pack shall contain the same species, dimensions and colour.

Shrink wrapped parcels shall be arranged on kiln dried and heat treated wooden pallets in accordance with ISPM No 15 or its equivalent to a height that will leave at least 50 mm space at the top when the pallet is loaded into a container. The clearance between the floor and the base of cross members of the pallet

shall be at least 100 mm to facilitate mechanical handling.

Palletized products shall be covered with another polyethylene film to prevent moisture from entering finished products and then strapped to make a parcel.

Shrink wrapped furniture components shall be packed into corrugated card boxes and supported with foam against scratches and handling damage.

11.0 Marking

Each pack or bundle shall be labelled with the following information:

a) Product
b) Model
c) Dimensions
d) Number of pieces
e) Quantity (m, m^2, m^3)
f) Name of manufacturer
g) Country of origin
h) Destination
i) Species
j) Pack number
k) Order/Contract number
l) Weight
m) Grade

All containerized finished wood products shall be fumigated against insects and other pest infestation with chemicals approved by the EPA.

Table 1: Permissible Defects in Furniture Components

1	SEASONING DEFECTS	Grade I	Grade II	Grade III
1.1	WARP			
1.1.1	Bow	Not allowed	Not allowed	Not allowed
1.1.2	Spring	Not allowed	Not allowed	Not allowed
1.1.3	Cup	Not allowed	Not allowed	Not allowed
1.1.4	Twist	Not allowed	Not allowed	Not allowed
1.2	Check	Not allowed	Allowed. Maximum 0, 25mm wide 10mm long in max 5% of parcel	Allowed. Maximum 0, 25mm wide 10mm long in max 10% of parcel
1.3	End Splits	Not allowed	Not allowed	Not allowed
	Cracks	Not allowed	Not allowed	Not allowed

2	BIOLOGICAL DEFECTS			
2.1	BORER DEFECTS	Grade I	Grade II	Grade III
2.1.1	Pin worm hole	Not allowed	Allowed. One for every 1,0m length. Max 5% of parcel. Filled & plugged.	Allowed. Max 2 for every 1, 0 m length. Scattered. Filled and
1.1.2	Short holes	Not allowed	Not allowed	Not allowed
1.1.3	Grub holes	Not allowed	Not allowed	Not allowed

2.2	NATURAL DEFECTS	GRADE I	GRADE II	GRADE III
2.2.1	Resin pockets/ Pitch pockets	Not allowed	Not allowed	Maximum 2 allowed. Not exceeding 1, 5 mm wide and 10mm long. Max 10% of parcel
2.2.2	Sound knots / Tight knots	Maximum 1 smooth knot allowed; diameter not more than ⅛ width in every 1,0m length	Maximum 1 smooth knot allowed; diameter not more than ¼ of the width in every 1,0 m length	Maximum 1 smooth knot allowed; diameter not more than ⅓ of the width in every 1,0 m length
2.2.3	Pin knots	Not Allowed	Not Allowed	Not Allowed
2.2.4	Splay or Arris knot	Not Allowed	Not Allowed	Not Allowed
2.2.5	Unsound or Delayed Knots	Not Allowed	Not Allowed	Not Allowed
2.2.6	Compression Failure	Not Allowed	Not Allowed	Not Allowed
2.2.7	Bright Sapwood	Not Allowed	Not Allowed	Not Allowed
2.2.8	Medium Sap stain	Not Allowed	Not Allowed	Allowed. ¼ of face. Max 5% of parcel
2.2.9	Bluestain	Not Allowed	Not Allowed	Allowed
2.2.10	Discolouration	Not Allowed	Not Allowed	Allowed
2.2.11	Slop Grain	1:10	1:8	Irregular grain Allowed

3.0	Manufacturing Defects	Grade I	Grade II	Grade III
3.1	Hit and Miss	Not Allowed	Allowed. 0, 5 mm deep, 300 mm long. 10% of parcel	Allowed

3.2	Chipped Grain	Allowed. Max 0,5 mm deep. Max 10% surface of piece in 10% of parcel	Allowed. Max 1, 0 mm deep. Max 10% surface of piece in 10% of parcel	Allowed
3.3	Torn Grain	Allowed. Max 0,5 mm deep on 10% face in 10% of parcel	Allowed. Max 0,75 mm deep on 10% face in 10% of parcel	Allowed. Max 1,0 mm deep on 10% face in 10% of parcel
3.4	Raised Grain	Allowed if light and can be removed by sanding	Allowed if light and can be removed by sanding	Allowed; Max 1,0 mm above surface
3.5	Chip Marks	Allowed. Max 0,4 mm deep in 5% parcel	Allowed. Max 0,5 mm deep in 5% parcel	Allowed. Max 0,75 mm deep in 5% parcel
3.6	Burn Marks	Not Allowed	Not Allowed	Allowed.
3.6	Cutter Marks	Not Allowed	Not Allowed	Allowed. Even and smooth to touch. Max 2 per 25 mm

APPENDIX 1

Recommended Species for Furniture – Tables

BOTANICAL NAME	PILOT NAME	STANDARD NAME	GHANAIAN NAME
Afzelia africana	*Doussie*	*Afzelia*	*Papao/Papanua*
*Albizia zygia**	-	*Albezia*	*Okoro*
*Alstonia boonei**	*Emien*	*Alstonia*	*Sindru/Sinduro/Sinuro*
*Amphimas spp**	*Lati*	-	*Yaya*
*Aningeria robusta/altissima**	*Aningre*	*Aningeria*	*Asanfena/Asanfenanini*
*Antiaris Africana**	*Ako*	*Antiaris*	*Kyenkyen*
*Antrocaryon micraster**	*Onzabili*	*Antrocaryon*	*Aprokuma*
Berlinia Spp.	*Ebiara*	*Berlinia*	*Kwatafoimpaboa*
*Rhodo buonopozense**	*Kapokier*	*Akata*	*Akata/Akonkodie*
*Canarium schweinfurthii**	*Aiele*	*Canarium*	*Bediwonua*
Cedrella odorata	*Cedro*	*Cedar*	*Cedrella*
*Ceiba petandra/thonningii**	*Fuma*	*Ceiba*	*Onyina*
*Celtis mildbraedii/zenkeri**	*Ohia*	*Celtis*	*Esa/Esakoko*
*Petersianthus macrocarpus**	*Essia*	*Essia*	*Esia*
Copaifera salikounda	*Etimoe*	*Copaifera*	*Entedua*
Cordia millenii/platythrysa	*Cordia*	*Cordia*	*Tweneboa/Twenedua*
*Daniella ogea/thurifera**	*Faro*	*Ogea*	*Hyedua*
Distemonanthus benthamianus	*Movingui*	*Ayan*	*Bosamdua*
Entandrophragma angolense	*Tiama*	*Gedu-Nohor*	*Edinam*
Entandrophragma candollei	*Kosipo*	*Omu*	*Penkwa-akoa*
Entandrophragma cylindricum	*Sapelli*	*Sapele*	*Penkwa*
Entandrophragma utile	*Sipo*	*Utile*	*Efuobrodedwo*
*Sterculia oblonga**	*Eyong*	-	*Ohaa*
*Chyrsophyllum africanum**	*Longhi (Rouge)*	*Longi Rouge*	*Adasema*
*Chyrsophyllum albidum**	*Longhi*	*Longi Blanc*	*Akasaa*
*Chyrsophyllum subnundum**	*Longhi (Rouge)*	*Longhi (Rouge)*	*Kanabe*
Guarea cedrata	*Bosse (clair)*	*Guarea (scented)*	*Kwabohoro*
Guarea thompsonii	*Bosse (fancé)*	*Guarea (black)*	*Kwadwuma/Kwabohorni*
Guibourtia ehie	*Ovengkol*	*Ovangkol*	*Anokye-hyedua/Black*
Heritiera utilis	*Niangon*	*Niangon*	*Nyankom*
*Holoptelea grandis**	*Kekele*	-	*Onokwa*
Khaya anthoteca	*Acajou*	*African Mahogany*	*Kruben*
Khaya grandifoliola	*Acajou*	*Anthoteca*	*Kruben/Odupon*
Khaya ivorensis	*Acajou*	*African Mahogany*	*Dubini*
Lovoa trichilioides	*Dibetou*	*African Walnut*	*Dubini-biri*
Mansonia altissima	*Mansonia*	*Mansonia*	*Oprono*
Milicia excelsa/regia	*Iroko*	*Iroko/Odum*	*Odum*
*Mitragyana ciliata**	*Abura*	-	*Subaha*
Nesogordonia paparifera	*Kotibe*	*Danta*	*Danta*
Pericopsis elata	*Afrormosia*	*Afrormosia*	*Kokrodua*

APPENDIX 1
Recommended Species for Furniture - Tables

BOTANICAL NAME	PILOT NAME	STANDARD NAME	GHANAIAN NAME
*Pterygota macrocarpa**	*Koto*	*Pterygota*	*Kyere*
*Pycnanthus angolensis**	*Illomba*	*Illomba*	*Otie*
*Rhodognaphalon brevicuspe**	*Kondroti*	*Bombax*	*Onyina-koben*
*Scottelia spp**	*Akossika*	.	*Tiabutuo*
*Sterculia rhinopetala**	*Lotofa*	*Sterculia (bown)*	*Wawabima*
Tectona grandis	*Teak*	*Teak*	*Teak*
*Terminalia ivorensis**	*Framire*	*Idigbo*	*Emire*
*Terminalia superba**	*Limba*	*Afara*	*Ofram*
Tieghemella beckelii	*Makore*	*Makore*	*Baku/Makore*
*Triplochiton scleroxylon**	*Obeche*	*Obeche*	*Wawa*
Turreanthus africanus	*Avodire*	*Avodire*	*Avodire*

* Species which require preservative treatment.
NB: This list is by no means exhaustive.

Appendix 2

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Notes

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