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Furniture — Quality and grading of wooden furniture

Rwanda Standards Board

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In order to match with technological development and to keep continuous progress in industries, standards are subject to periodic review. Users shall ascertain that they are in possession of the latest edition

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 413 was prepared by Technical Committee RSB/TC 54, *Timber, furniture and engineered wood.*

In the preparation of this standard, reference was made to the following standards:

1) ISO 21887- 2007-11: Durability of wood and wood - based products — Use classes

2) GS 983:2009, Furniture — Specification for Furniture Components

The assistance derived from the above source is hereby acknowledged with thanks.

Committee membership

The following organizations were represented on the Technical Committee on Timber, Furniture and Engineered wood (RSB/TC 54) in the preparation of this standard.

Action pour le Development de l`Artisanat au Rwanda (ADARWA)

Association pour la défense des droits des consommateurs au Rwanda (ADECOR)

Association pour la Promotion des Artisans du Bois (APROAB)

GiZ Eco—Emploi

Integrated Polytechnic Regional Centre (IPRC) — KITABI

Kalka and Partners Ltd

MANUMETAL

MASS DESIGN

Ministry of Trade and Industry (MINICOM)

National Industrial Research and development Agency (NIRDA)

New Forest Company (NFC)

REAL Contractors

Rwanda Education Board (REB)

Rwanda Environment Management Authority (REMA)

Rwanda Public Procurement Authority (RPPA)

Rwanda Water and Forestry Authority (RWFA)

Rwanda Wood Association

STRAW Tech

University of Rwanda — College of Agriculture, Animal Science and Veterinary Medicine (UR — CAVM)

University of Rwanda — College of Science and Technology (UR — CST)

Rwanda Standards Board (RSB) — Secretariat

Introduction

Despite the Rwandan growth trend, the wood sector has not been implemented as required to produce high quality wood products and vigorous competitive market. The quality of wooden furniture is highly affected by the quality of timber, standardized production chain, quality control mechanism and grading rules. The lack of aforesaid factors results into market dominated by poor quality wooden furniture, compromised safety and unfair competition at the market.

The emerging market dynamics show that consumer's preferences have gradually shifted from furniture made by local timbers to the imported ones, which is considered as a limiting factor to the development and growth of the wood economy in Rwanda.

To ensure a positive trade balance in wood market there is a dire need to improve and ensure quality of domestic wood products.

This Standard is one of the series of standards on furniture in Rwanda. The series currently consists of the following:

*DRS 413:2019 Furniture — Quality and grading of wooden furniture (**Under development**)*

*DRS 424:2019 Furniture — Specifications for bedsteads (**Under development**)*

*DRS 425:2019 Furniture — Storage units — Functional sizes, stability, strength and durability for storage units (**Under development**)*

*DRS 426:2019 Furniture — Chairs and tables for educational institutions — Functional sizes, strength, durability and stability for seating and tables (**Under development**)*

*Furniture — Chairs and tables for home furniture — Functional sizes, strength, durability and stability for seating and tables (**Under development**)*

*Furniture — Tables — Test methods for the determination of stability, strength and durability (**Under development**)*

ISO 7170:2005 Furniture — Storage units — Determination of strength and durability

ISO 7171:2019 Furniture — Storage units — Test methods for the determination of stability

ISO 7173:1989 Furniture — Chairs and stools — Determination of strength and durability

Furniture — Quality and grading of wooden furniture

1 Scope

This Draft Rwanda Standard establishes guidelines for classification and grading of furniture components for general application in furniture and similar products. This standard spells out the requirements for machined wood products intended for general application in furniture including furniture for load bearing, furniture for non-load bearing and furniture for decorative art.

Though this standard is not intended for non-wooden furniture, it is applicable to furniture with wooden components.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 24294:2013: Timber - Round and sawn timber - Vocabulary

RS EAS 24:2000: Timber industry – Glossary of terms

EAS 325: Wood preservative and treated timber – Guide to sampling and preparation of wood preservative and treated timber for analysis

DRS xnn on Round and sawn timber - Nomenclature of timbers **(Under development)**

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in ISO 24294, RS EAS 24:2000 and the following apply.

3.1

Furniture

Movable and unmovable objects intended to support various activities such as seating, eating, sleeping, decorative art and storage.

EXAMPLE Furnishings, house fittings, fitments, accessories movable, fixtures, units, appliances, chattels and amenities; objects that make a building or a room suitable for living or working in.

3.2

Furniture quality

Degree to which a set of characteristics of wooden furniture fulfil requirements

3.3

Grading

Category or rank given to different quality requirements for wooden furniture having the same functional use

3.4

Plugs and fillers

Inserts into a piece of lumber to improve its appearance and usefulness

4 Categories of wooden furniture

4.1 Furniture for load bearing

Wooden furniture capable to support the weight of the overlying objects. Furniture for load bearing include but not limited to tables, chairs, beds, stair case, floor, cupboard, storage units and cabinet.

4.2 Non-load bearing Furniture

Wooden furniture not intended to support the weight of overlying object. Non load bearing furniture include but not limited to skirting, architraves, soffit, furniture fittings, wall panelling and wood panels.

4.3 Decorative furniture

Load bearing or non – load bearing furniture designed to serve its purpose with ornamental features.

5 Requirements for quality of wooden furniture

5.1 Timber species

Timber for wooden furniture shall be species recognized as being resistant to microorganisms, insect and marine borers attack. Perishable timber species shall be accepted when such timber is treated against microorganisms, insect and marine borers with a non-leachable preservative complying with the requirements of EAS 325.

Timber used for wooden furniture shall be one of the renown timbers species listed in DRS xnn **(Under development).** However, this list does not exclude the use of other species of timber provided they are found suitable for any particular purpose.

Note Renown timber species for load bearing wooden furniture in Rwanda include Markhamia lutea, Entendrophragma excelsum, Khaya anthoteca, Cedrela serrata , Entendrophragma utile, Entendrophragma cylindricum, Milicia excelsa, Eucalyptus spp and Cupressus lustanica.

5.2 Moisture Content

The moisture content of the machined wood products shall be

For all applications the moisture content shall be within the limits of 12 – 19%.

Note Specific percentage values for moisture content within the provided ranges maybe agreed between two parties.

5.3 Measurement

The thickness, width, diameter and length of furniture components shall be determined using calibrated/verified tools namely micrometer screw gauge, calliper or tape measure as appropriate to an accuracy of at least 1 mm.

5.4 Tolerance

Tolerance on furniture components shall be as follows:

Thickness: ± 1 mm

Width: ± 1 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 similar pieces (Length of one piece (m) x Total Number of pieces)

$$\text{Surface area } (m^2) = Total\ length\ (m)\ \text{x}\ \frac{Width\ (mm)}{10^3}$$

$$Volume\ (m^3) = Numberof\ pieces\ \text{x}\frac{Surface\ area\ of\ one\ piece\ (m^2)\text{x}\text{Thickness (mm)}}{10^3}$$

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

$$Volume\ (m^3) = Number\ of\ pieces\ \text{x}\frac{\text{Area of cross section per piece (m}m^2\text{)}}{10^6}\text{x Length (m)}$$

5.6 Dimensions

Furniture components shall be manufactured in accordance with specifications in the working drawing as agreed between the purchaser and the manufacturer.

5.7 Finishing

Finishing of wooden furniture components shall be by sanding and application of the coat surface finish.

6 Grading of wooden furniture

Furniture components meeting requirements in clause 5 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 and Grade III.

6.1 Grade I

This is the highest grade in which pieces of wooden furniture 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 is the medium grade required where 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.

Table 1: Permissible defects in furniture components

No	SEASONING DEFECTS	GRADE I	GRADE II	GRADE III
1				
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

No	SEASONING DEFECTS	GRADE I	GRADE II	GRADE III
1				
1.1.4	Twist	Not allowed	Not allowed	Not allowed
1.2	Check	Not allowed	Allowed. Maximum 0,25 mm wide, 10 mm long in max 5 % of parcel	Allowed. Maximum 0,25 mm wide, 10 mm long in max 10 % of parcel
1.3	End splits	Not allowed	Not allowed	Not allowed
1.4	Cracks	Not allowed	Not allowed	Not allowed
2	**BIOLOGICAL DEFECTS**			
2.1	**BORER DEFECTS**			
2.1.1	**Pin worm**	Not allowed	Allowed. One for every 1, 0 m length, max 5% of parcel. Filled and plugged.	Allowed. Max 2 for every 1, 0 m length. Scattered. Filled and plugged.
2.1.2	**Shot hole**	Not allowed	Not allowed	Not allowed
2.1.3	**Grub holes**	Not allowed	Not allowed	Not allowed
2.2	**NATURAL DEFECTS**			
2.2.1	Resin pockets/Pitch pockets	Not allowed	Not allowed	Maximum 2 allowed not exceeding 1,5 mm wide and 10 mm long. Max 10% of parcel
2.2.2	Sound knots/Tight knots	Maximum 1 smooth knot allowed; diameter not more than 1/3 width in every 1,0 m length	Maximum 1 smooth knot allowed; diameter not more than 1/4 width in every 1,0 m length	Maximum 1 smooth knot allowed; diameter not more than 1/3 width in every 1,0 m length
2.2.3	Pin knots	Not allowed	Not allowed	Not allowed
2.2.4	Splay or Arris knots	Not allowed	Not allowed	Not allowed
2.2.5	Unsound knots/Decayed 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 sapstain	Not allowed	Not allowed	Allowed.1/4 of max 5%
2.2.9	Bluestain	Not allowed	Not allowed	Allowed
2.2.10	Discoloration	Not allowed	Not allowed	Allowed

No	SEASONING DEFECTS	GRADE I	GRADE II	GRADE III
1				
2.2.11	Slope of grain	1:10	1:8	Irregular grain allowed
3.0	**MANUFACTURING DEFECTS**			
3.1	Hit and miss	Not allowed	Allowed. 0, 5 mm deep, 300 mm long. 10 % of parcel	Allowed. 0, 5 mm deep, 300 mm long. 10 % of parcel
3.2	Chipped grain	Allowed. Maximum 0, 5 mm deep. Max 10 % surface of piece in 10 % of parcel	Allowed. Maximum 1, 0 mm deep. Max 10 % surface of piece in 10 % of parcel	Allowed
3.3	Torn grain	Allowed. Maximum 0,5 mm deep on 10 % face in 10 % of parcel	Allowed. Maximum 0,75 mm deep on 10 % face in 10 % of parcel	Allowed. Maximum 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. Maximum 1,0 mm above surface
3.5	Chip marks	Allowed. Maximum 0.4 mm deep in 5% parcel	Allowed. Maximum 0.5 mm deep in 5% parcel	Allowed. Maximum 0.75 mm deep in 5% parcel
3.6	Burn marks	Not allowed	Not allowed	Allowed
3.7	Cutter marks	Not allowed	Not allowed	Allowed. Even and smooth to touch. Max 2 per 25 mm

7 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 applicable regulations or their 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 moisture barrier or a 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.

8 Marking

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

a) Product

b) Model and date of manufacture

c) Dimensions

d) Number of pieces

e) Quantity, expressed in m, m^2 or 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 authority in charge of environment protection.

Bibliography

[1] GS 983:2009, *Furniture – Specification for Furniture Components*

[2] RS Xbb_2019, Round and sawn timber – Nomenclature of timbers used in Rwanda

ISPM 15 - 2017, Regulation of wood packaging material in international trade (Source: http://www.fao.org/3/a-mb160e.pdf, query 2019-03 06)

ISO 9000:2015, Quality management systems – Fundamentals and vocabulary

ICS 97.140