
**Grading system for rattan:
Requirements and classification**

Système de classement pour le rotin: exigences et classification

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 296, *Bamboo and rattan*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The grading of products through visual, mechanical or other techniques is important for ensuring consumer satisfaction, safety in use and for facilitating and enhancing trade along the production–consumption chain. It usually involves inspection, assessment and sorting according to size, quality and market value.

Rattan, an important non-timber forest product of the moist tropical regions in many Asian and West African countries, is traded for furniture production and in the craft industry around the world. The International Bamboo and Rattan Organization (INBAR) reported that in 2019, global imports of rattan products reached USD 471,7 million ^[2] and with the urgency to minimize plastic usages, demand for rattan products would gradually increase. In recent times, new designs for rattan furniture and basketry products continue to appeal to modern consumers. Many INBAR member countries are producers and exporters of rattan products with Indonesia, China and Vietnam having increasing shares in the global rattan trade.

Grading of rattan products is important to eliminate confusion and misunderstanding between the sellers and the buyers both at the national and international levels. Currently, grading and classification of rattan vary significantly from one country to another even among INBAR member countries. Other international organizations such as the Food and Agriculture Organization (FAO) ^[3] have agreed on the need for a rattan grading standard, and suggested that such a standard could be developed based on the work by K.M Bhat ^[4]. Some INBAR member countries have adopted varied systems of grading: some consist of five grade classes, while others have 3 or 4 classes.

Currently, no international standard on grading system is available to provide commonly accepted criteria to sort, assess and classify rattan. The aim of developing such an international standard would be to enhance trade and innovation in quality rattan products at the international level.

This document provides a grading and classification system for rattan. It addresses the existing inconsistencies among producers and exporters of rattan raw materials and products among INBAR member countries and provides a consensus on the method and system of grading and classifying rattan and the products. This document aims to help improve international trade of rattan products among stakeholders by providing an assurance of the quality of raw materials or products with respect to specific aspects of quality that influences the end use.

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Grading system for rattan: Requirements and classification

1 Scope

This document gives guidelines and requirements to sort and classify rattan cane materials (poles and derivatives) based on physical properties, quality and market values.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

brightness or glossiness

parameters used to visually separate rattan canes based on their surface quality whereby rattan canes with bright and glossy surfaces are graded superior to those having dull and non-glossy surfaces

3.2

colour

surface quality parameter that gives higher grade to rattan canes having whitish, yellowish or creamy colours compared to those with brownish colours

3.3

diameter

length, D , of a straight line passing from one point (P_1) to the other (P_2) through the centre of a cross section of a rattan pole and a core

Note 1 to entry: An example of a diameter is shown in Figure 1.

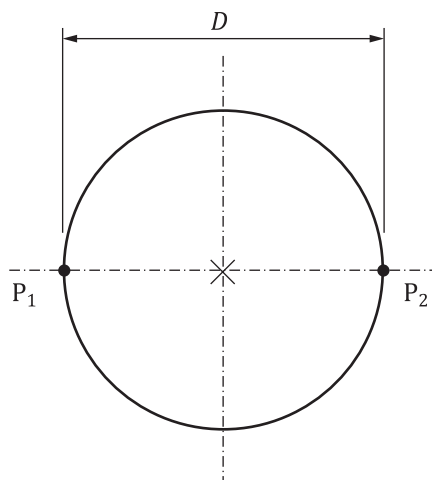


Figure 1 — Example of diameter

3.4

length

measured distance between two ends of a rattan pole or a rattan derivative

3.5

width

distance, w , between the edges of a piece of rattan derivative, except a round core, at the specified place of measurement

Note 1 to entry: An example of width is shown in Figure 2.

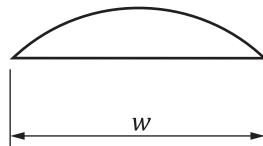


Figure 2 — Example of width

3.6

thickness

distance, d , between the faces of a piece of rattan derivative, except a round core, at the specified place of measurement

Note 1 to entry: An example of thickness is shown in Figure 3.



Figure 3 — Example of thickness

3.7

uniformity

state or quality of being similar, consistent, homogeneous or regular, also implying consistency or lack of variation

3.8

taper

gradual reduction in *diameter* (3.3) of a rattan cane along its *length* (3.4)

Note 1 to entry: This term is reproduced from another document and the wording is modified to apply to rattan.

[SOURCE: ISO 15206:2010, 3.46, modified—Note 1 to entry has been added.]

3.9

defect

imperfection or abnormality in rattan cane that lower its strength, durability or appearance quality

3.10

blemish

dark spots or discolouration in rattan cane caused by staining fungi, mineral stains or insect attack

3.11

break

separation of the fibres, which extends through the rattan cane from one surface to the other usually perpendicularly or at the right angle to the longitudinal direction

3.12

bruise

lesions on rattan cane surfaces that occur during harvesting operations or due to improper processing

3.13 check

narrow opening on a surface of rattan cane in lengthwise direction indicating fibre separation that does not extend through the cane to another surface

3.14 decay

disintegration or decomposition of cane due to actions of cane-destroying fungi or other micro-organisms

Note 1 to entry: The cane can often soften, lose strength and mass, and sometimes change texture and colour.

3.15 pin hole

tiny cavity/tunnel [$\leq 0,5$ mm in *diameter* (3.3)] caused by insects or their larvae (worms) or by mechanical means along the *length* (3.4) or across rattan cane

3.16 shake

partial or complete separation between adjoining layers of tissues, as seen in end surfaces, caused by stresses developed in cutting and collecting, or in unequal drying of immature stem

3.17 worm hole

cavity/tunnel [$> 0,5$ mm in *diameter* (3.3)] caused by insects or their larvae (worms) or by mechanical means along the *length* (3.4) or across rattan cane

3.18 wrinkle

longitudinal wave on the surface of rattan cane, often found in immature rattan

4 Method of classification

4.1 General

Rattan shall be classified according to the criteria in 4.2 and 4.3.

4.2 Rattan poles

- a) Diameter
 - 1) Small diameter (below 18 mm)
 - 2) Large diameter (18 mm and above)
- b) Physical processing
 - 1) Natural (with skin intact)
 - 2) Peeled

4.3 Rattan derivatives

- a) Type
 - 1) Core (e.g. flat core, flat oval core and round core)
 - 2) Peel (with or without skin)
- b) Width (or diameter for round core)

5 General requirements

5.1 Rattan poles

- a) Canes shall have authentic botanical identity when specified by the buyer.
- b) Canes shall be straight, round, mature and seasoned to moisture content not exceeding 20 % or as specified by the buyer.
- c) Canes shall not develop any breaks, checks and other defects in bending or in any other processing stage.
- d) Canes shall be either oil-cured or chemically treated with anti-staining fungicide, bleached or fumigated as specified by the buyer.
- e) Plugging/filling or covering of visible defects shall not be permitted in any form.

5.2 Rattan derivatives

- a) Canes from which the cores and peels are produced shall have authentic botanical identity when specified by the buyer.
- b) Canes shall be matured and seasoned to moisture content not exceeding 20 % or as specified by the buyer.
- c) Canes shall be either oil-cured or chemically treated with anti-staining fungicide, bleached or fumigated as specified by the buyer.
- d) Plugging/filling or covering of visible defects shall not be permitted in any form.
- e) Diameter or width of cores and peels shall be uniform throughout the length.

6 Dimension requirements

6.1 Rattan poles

6.1.1 Small diameter canes

- a) The length shall be as specified by the buyer, taken as the shortest distance in metres from one extreme end to the other and the value shall be rounded-off to the nearest 0,05 m.
- b) The diameter shall be below 18 mm, taken in the mid-internode of the smaller end; the following diameter classes shall be adopted for trading: 2 mm to 6 mm, above 6 mm to 11 mm and above 11 mm to 17 mm.
- c) The taper shall not exceed 3 mm for a cane length of 4,5 m.
- d) The internodal length shall not be less than 50 mm, taken as the shortest distance from one node to another and expressed in mm.

6.1.2 Large diameter canes

- a) The length shall be as specified by the buyer, taken as the shortest distance in metres, from one extreme end to the other and the value shall be rounded-off to the nearest 0,05 m.
- b) The diameter shall be 18 mm and above, taken in the mid-internode of the smaller end; the following diameter classes shall be adopted for trading: 18 mm to 20 mm, above 20 mm to 25 mm, above 25 mm to 30 mm, above 30 mm to 35 mm, above 35 mm to 40 mm and above 40 mm.

- c) The taper shall not exceed 5 mm for a cane length of 3,5 m.
- d) The internodal length shall not be less than 50 mm, taken as the shortest distance from one node to another and expressed in mm.

6.2 Rattan derivatives

- a) The length shall be as specified by the buyer, taken as the shortest distance, in metres, from one extreme end to the other and the value shall be rounded-off to the nearest 0,05 m.
- b) The diameter which is applicable only to round cores, shall be from 2 mm to 10 mm, with a tolerance of +0,5 mm.
- c) The width which is applicable to flat or oval cores and peels, shall be from 2 mm to 10 mm.
- d) The thickness which is applicable to flat or oval cores and peels, shall be from 1 mm to 6 mm.

7 Presence of defects

7.1 Prohibited defects

Breakages, decays, shakes, worm holes and wrinkles shall not be permitted.

7.2 Permissible defects

Blemishes, bruises, checks and pin holes to the extent specified for a specific grade shall be permissible.

8 Appearance

Canes shall be inspected for uniform colour and brightness or glossiness.

9 Grading rules

9.1 General

Based on the quality consideration in terms of appearance and the extent of permissible defects, the following grades in [9.2](#) and [9.3](#) shall be recognized.

9.2 Rattan poles

9.2.1 Small diameter canes

The grade requirements for small diameter canes shall be as given in [Table 1](#).

Table 1 — Grade requirements for small diameter canes

Grade	Requirement
Super quality	Entirely (100 % of specified length) free from defects, ivory white, cream or yellowish in colour, uniformly bright or glossy, easily pliable, internodal length > 100 mm
I	Extent of permissible defects shall not exceed 15 % of standard length, ivory white, cream or yellowish, easily pliable, internodal length > 100 mm
II	Extent of permissible defects shall not exceed 50 % of standard length, ivory white, cream or brownish, internodal length > 100 mm

Table 1 (continued)

Grade	Requirement
III	Extent of permissible defects shall not exceed 50 % of standard length, whitish, yellowish, brown or dark brown, internodal length > 50 mm

9.2.2 Large diameter canes

The grade requirements for large diameter canes shall be as given in [Table 2](#).

Table 2 — Grade requirements for large diameter canes

Grade	Requirement
Super quality	Entirely (100 % of specified length) free from defects, ivory white, cream or yellowish in colour, uniformly bright or glossy surfaces, internodal length > 100 mm
I	Extent of permissible defects shall not exceed 15 % of specified length, ivory white, cream or yellowish, uniformly bright surfaces, internodal length > 100 mm
II	Extent of permissible defects shall not exceed 50 % of specified length, ivory white, cream or brownish, internodal length > 100 mm
III	Extent of permissible defects shall not exceed 75 % of specified length, whitish, yellowish, brown or dark brown, internodal length > 50 mm

9.3 Rattan derivatives

The grade requirements for rattan derivatives shall be as given in [Table 3](#).

Table 3 — Grade requirements for rattan derivatives

Grade	Requirement
I	Entirely free from defects, whitish in colour
II	Extent of permissible defects shall not exceed 15 % of standard length, white, yellowish or brown in colour

10 Inspection procedure

10.1 Rattan poles

- Rattan poles shall be inspected and classified individually.
- A minimum of 10 % of the lot shall be inspected at random to determine size and uniformity.

10.2 Rattan derivatives

- Rattan derivatives shall be inspected and classified individually.
- A minimum of 10 % of the lot shall be inspected at random to determine size and uniformity.