DRAFT TANZANIA STANDARD

Plywood — Bonding quality — Part 2: Requirements

TANZANIA BUREAU OF STANDARDS

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0. National Foreword

The Tanzania Bureau of Standards is the statutory national standards body for Tanzania, established under standards Act No. 3 of 1975, amended by Act No. 2 of 2009.

This draft Tanzania Standard is being prepared by BCDC 6 Sawn timber, logs and wood-based components Technical Committee under the supervision of the Building and Construction Divisional Committee (BCDC).

This draft Tanzania Standard is an identical adoption of the 2nd Edition of International Standard ISO 12466-2:2007 *Plywood — Bonding quality — Part 2: Requirements*. In this standard, certain modifications due to national requirements have been made.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. TBS and/or ISO shall not be held responsible for identifying any or all such patent rights.

BCDC 6 (67) CD2/ISO 12466 consists of the following parts, under the general title *Plywood — Bonding quality*:

a) *Part 1:Test methods*

b) *Part 2: Requirements*

Terminologies and conventions

The text of the International Standard is hereby being recommended for approval without deviation for publication as draft Tanzania standard.

Some terminologies and conventions are not identical with those used in Tanzania Standards; attention is drawn to the following;

The comma has been used as a decimal marker for metric dimensions. In Tanzania, it is current practice to use a full point on the baseline as the decimal marker.

Whenever the words “ISO Standard” appear referring to this standard, they should read as “Tanzania Standard”.

This standard of the International Organization for Standardization (ISO) was approved for publication as a Tanzania Standard with the following editorial changes:

a) deletion of informative preliminary material from the adopted International Standard
b) inclusion of national informative material (National foreword, terminologies and conventions)
c) deletion of the translation text in French to retain English language which is the official national language
d) changes in document layout (pagination, font type and size)

Plywood — Bonding quality —Part 2: Requirements

1 Scope

This part of BCDC 6 (67) CD1/ISO 12466 specifies requirements for determination of bonding quality class of plywood, blockboard, battenboard, and laminboard, bonded with thermosetting resins, according to their intended end uses.

NOTE Appropriate test methods are specified in ISO 12466-1.

2 Normative references

The following referenced documents are 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.

BCDC 6 (60) CD2/ISO 12465, *Plywood — Specifications*

ISO 12466-1:2007, Plywood — Bonding quality — Part 1: Test methods

3 Bonding classes

Bonding quality is categorized into three classes, in accordance with BCDC 6 (60) CD2/ISO 12465, based upon moisture resistance as follows.

3.1 Class 1: Dry conditions

This bonding class is appropriate for veneer plywood intended for use in normal interior climates excluding any extended direct exposure to weather.

3.2 Class 2: Tropical-dry/humid conditions

This bonding class is appropriate for veneer plywood intended for protected external applications (e.g behind cladding or under roof coverings), but capable of resisting weather exposure for short periods (e.g. when exposed during construction). It is also suitable for interior situations where the service moisture condition is higher than the class 1 level.

3.3 Class 3: High humidity/exterior conditions

This bonding class is designed for veneer plywood intended for exposure to weather over sustained periods.

NOTE The durability of plywood depends not only upon the level of bonding performance, but also upon other factors.

4 Requirements

4.1 General

For each bonding quality class, both the mean shear strength and the average apparent cohesive wood failure shall be determined in accordance with ISO 12466-1.

Test pieces shall be pre-treated as specified for the applicable bonding class, as given in TABLE 1. A minimum of 10 test pieces per glue line shall satisfy the criteria given in TABLE 2.

For Class 2 and Class 3 where two pre-treatments are required, each pre-treatment shall be carried out on a separate set of not less than five test pieces for each glue line.

4.2 Pre-treatments

TABLE 1 — **Pre-treatment requirements**

Bonding class	Pre-treatment					
	Basic		Additional			
	24 h Cold soak (ISO 12466-1: 2007, 5.1.1)	VP (ISO 12466-1: 2007, 5.1.4)	6 h Boil (ISO 12466-1: 2007, 5.1.2)	BDB (ISO 12466-1: 2007, 5.1.3)	72 h Boil (ISO 12466-1: 2007, 5.1.5)	Steam (ISO 12466-1: 2007, 5.1.6)
1	X	X	—	—	—	—
2	X	X	X	X	X	X
3	X	X	—	X	X	X

NOTE
VP: test specimens are immersed in water at room temperature and a vacuum of 85 kPa is applied for 30 min followed by the immediate application of a pressure of 450 kPa to 480 kPa for 30min.

BDB: immersion for 4 h in boiling water, then drying in the ventilated drying oven for 16 h to 20 h at (60 ± 3) °C, then immersion in boiling water for 4 h, followed by cooling in water at less than 30 °C for at least 1 h.

One of the indicated basic pre-treatments shall be chosen, plus one of the indicated additional pre-treatments for bonding class 2 and bonding class 3.

For full phenolic adhesives, when VP is used as the basic pre-treatment, an additional pre-treatment needs to be only occasionally conducted for validation purposes.

4.3 Glue line requirements

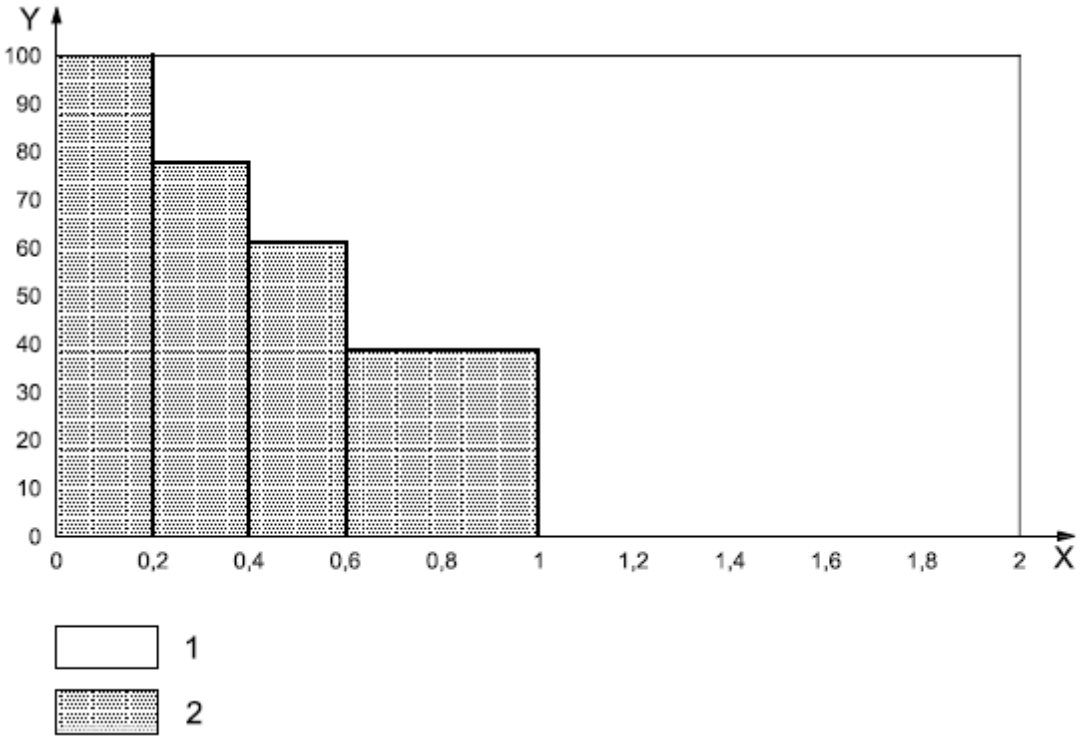
For all three bonding classes, each glue line tested shall satisfy two criteria: the mean shear strength and the average apparent cohesive wood failure, as combined in TABLE 2.

TABLE 2 — **Glue line requirements**

Mean shear strength τ MPa	Average apparent cohesive wood failure %
$\tau < 0.2$	not applicable
$0.2 \leq \tau < 0.4$	≥80
$0.4 \leq \tau < 0.6$	≥60
$0.6 \leq \tau \leq 1.0$	≥ 40
$1.0 < \tau$	no requirement

The relationship between the average percentage of apparent cohesive wood failure and the mean shear strength given in TABLE 2 is illustrated in FIGURE 1.

If ISO 12466-1:2007, Annex B (chisel/knife testing) is used, the average bond quality of each glue line of test sample shall be a minimum of 2 and the overall average bond quality for all glue lines in the test sample shall be 5.



Key

1 accept

2 fail

X mean shear strength, τ, MPa

Y average apparent cohesive wood failure, %

FIGURE 1 — **Relation between average percentage of apparent cohesive wood failure and mean shear strength**

5 Determination of bonding quality

The comparison of results obtained in accordance with ISO 12466-1 with the requirements defined in this part of BCDC 6 (67) CD1/ISO 12466 allows determination of the bonding class to which the tested panel belongs.

Bibliography

[1] BCDC 6 (49) CD2/ISO 1096, *Plywood — Classification*

[2] BCDC 6 (51) CD2/ISO 2074, *Plywood — Vocabulary*

