

NATIONAL PROGRAM FOR WOOD QUALITY

HARDWOOD AND PINUS PLYWOOD PNQM-CT AND PNQM-CP

PARAMETERS REV.05 (21/01/09)

1 – LOGS CLASSIFICATION

- Classe 1: Density < 500 kg/m³;
- Classe 2: Density 500 - 600 kg/m³;
- Classe 3: Density 601 - 700 kg/m³.
- Classe 4: Density > 700 kg/m³.

2 – LOG COOKING

- Class 1: Not Mandatory;
- Class 2: Temperature >60°C Time >12 hours;
- Class 3: Temperature >60°C Time > 24 hours;
- Class 4: Temperature >60°C Time > 48 hours.

3 – PEELING - ALLOWANCE FOR VENEER DIMENSION

- Thickness: $\pm 7\%$ of nominal thickness. The average difference between the maximum and minimum must not be greater than 7% of the nominal thickness of the veneer;
- Length: At the criteria of the manufacturer (Not mandatory);
- Width: At the criteria of the manufacturer (Not mandatory);
- Square: At the criteria of the manufacturer (Not mandatory).

4 – DRYING – MOISTURE CONTENT

<i>Ply</i>	<i>Bonding</i>	
	<i>Phenolic</i>	<i>Ureic</i>
Face	< 12 %	< 14 %
Dry Core	< 08 %	< 12 %
Glue Core	< 08 %	< 08 %
Back Face	< 12 %	< 14 %

5 – VENEER CLASSIFICATION

According to ABNT (Brazilian Association of Technical Standards)

6 – RESIN RECEIVING

- Suppliers of respective Quality Certify, as long as the Supplier are certified by PNQM or, otherwise, through counter-test to be carried out in independent laboratory.
- Resin suppliers shall forward for every batch, sealed samples of supplied batch.

PHYSICAL AND CHEMICAL CHARACTERISTICS OF RESIN

<i>Description</i>		<i>Resin Type</i>	
		<i>Phenolic</i>	<i>Ureic</i>
Solids content (1g/3h/105°C)		48 – 51 %	64 – 66 %
Brookfield Viscosity (25°C):		400 – 800 cP	300 – 1000 cP
pH (25°C)		11,5 – 13,0	7,4 / 9,0
Gel Time (121°C)		6 – 11 minutos	-
Density (25°C)		1,19 – 1,25 g/cm ³	1,25 – 1,30 g/
Free formaldehyde	Low emission	-	máx. 0,5%
	High emission	-	> 0,5%

7 – EXTENDER RECEIVING

- Mix 50 gm of extender (wheat flour) with 100 ml of water (2:1 ratio) on receipt
- Mixture flow time (Ford cup nº 8) < 30 seconds.

8 – HARDENER RECEIVING

The resin supplier shall indicate a hardener to be used according the specified characteristics. The hardener receipt will be carried out counter the presentation, by the Supplier of respective Quality Certify, as long as the Supplier is certified by PNQM, otherwise, through the counter-test to be carried out by independent laboratory.

9 – HARDENER FORMULATION

For the following cases:

- Hardener use of own fabrication;
- Hardener use of different resin supplier.

Testing for glue line resistance must be carried out according with the procedures and methodology in ABNT Standards (see explicative observation 1 and 2)

10 – WOOD PRESERVATIVE RECEIVING

In accordance with Technical specifications and test reports furnished by manufacturer.

11 – TAPE AND STRING RECEIVAL FOR JOITING

<i>Material Type</i>	<i>Width</i>	<i>Grammage</i>	<i>Paper</i>	<i>Hole Diameter</i>	<i>Application Temperature</i>
Perfurated Gummed Tape	20 mm	40 g/m ²	KRAFT	> 4 mm	-
Soft Gummed Tape	20 mm	40 g/m ²	KRAFT	-	-
Resin String:	-	-	-	-	80 a 170 °C

12 – GLUE PREPARATION

For glue (including wood preservative);

<i>Item</i>	<i>Wood Class</i>	<i>Bonding</i>	
		<i>Phenolic</i>	<i>Ureic</i>
Solid Contents		> 35 %	> 25 %
Viscosity	1, 2 and 3	40 – 60 seconds	
	4	30 – 40 seconds	
Preparation Time		> 4 minutes	

13 – GLUE APPLICATION

- For grammage – g/m² (phenolic and ureic bonding):

<i>Venner Thickness – mm</i>	<i>Class 1</i>	<i>Class 2</i>	<i>Classes 3 and 4</i>
< 1,0 ¹	> 260	> 260	> 260
1,0 to 2,0	>280	>280	> 280
2,0 to 3,0	> 320	> 320	> 320
> 3,5	> 370	> 370	> 360

- For glue distribution:
Uniform distribution

14 – ASSEMBLY

- For moisture: In accord with item 4
- For temperature: Phenolic and Ureic Bonding < 40°C.
- For Destination, Quality and Dimension: In accord with product to be manufactured.
- For Composition: Balanced (as to thickness and grain direction).
- For Wood class disposition: Different classes assembled in a balanced and symmetric form;
- For minimum veneer quantity:

<i>Espessura do Painel – mm</i>	<i>Nº Mínimo de Lâminas</i>
03 to 06	03
09 to 12	05
15 to 18	07
21 to 25	09

15 – PRE-PRESS (recommended) – cold press

- For the press time:
 Phenolic and ureic bonding: 04 to 12 minutes;
- For press pressure:
 Phenolic and ureic bonding: 04 to 09 kgf/cm².

16 – ASSEMBLY

- For phenolic bonding:
 Maximum assembly time: 720 minutes (12 hours);
- For ureic bonding:

<i>Hardener</i>		<i>Free Formaldehyde</i>		
		<i>High</i>	<i>Medium</i>	<i>Low</i>
Solid ammonium sulfate	Content	máx. 1%	máx. 3%	máx. 1%
	Pot Life*	30 min	30 min	45 min
Ammoniacal ammonium sulfate solution	Content	3 – 5 %	3 – 5 %	3 – 5 %
	Pot Life*	60 min	60 min	60 min
Ammonia sulfate solution + retardant	Content	3 – 5 %	3 – 5 %	3 – 5 %
	Pot Life*	60 min	90 min	120 min

* Pot Life = useful glue life (after hardener added) at room temperature 25 to 30 °C.

7 – PRESS - hot press

Acceptance criteria

<i>Parameter</i>		<i>Bonding type</i>	
		<i>Phenolic</i>	<i>Ureic</i>
Load time – minutes		< 2,5	< 2,5
Temperature - °C		125 to 150	95 to 115
Pressure – kgf/cm ²	Tropical Wood	10 to 14	06 to 12
	Pine	08 to 12	-
Time in press – min./mm	Temperature < 140°C	1,0	0,5 + 02 min.
	Temperature > 140°C	0,8	

Observation: For plywood panels with a thickness equal to or less than 5 mm, the time in press can be reduced to 0.8 min/mm for phenolic bonding and 0.5 min for ureic bonding, keeping all the other parameters the same.

18 – REPAIRS AND PATCHES

- Recuperation of panel with synthetic or same class of wood putty eliminating defects such as knot holes, cracks and wrong side face, amongst others.

19 – TRIMMING

In accord with the following ABNT standard:

- Project 31:000.05-017 (ISO 1954) – Plywood – dimensional tolerances.

20 – FINAL SANDING

- For moisture:

Moisture content: < 12%

- For thickness:

In accord with ABNT Standard: Project 31:000.05-017 (ISO 1954) – Plywood – Dimensional tolerances

21 – PLYWOOD PANEL CLASSIFICATION

In accord with ABNT Standard (see explicative observation 1 and 2).

22 – PACKAGING

- Minimum packaging composition:

i. Export:

- Pallets or 03 skids;
- 03 (three) steel/plastic transversal belts;
- 02 (two) steel/plastic longitudinal belts;
- Plywood pack wrapped in plastic film;
- Veneer or cardboard pack protection;
- Pallet wood preservative in accord with Instruction ISPM -15

ii. Domestic market:

- Bulk

- Minimum packaging identification:

- Manufacturer name;
- Customer Name;
- Destination port;

- Panel quality;
- Panel dimension;
- Panel quantity;
- Certification Mark;
- Handling and Storage Instruction (protection against inclement weather, transport, maximum pile capacity and lifting equipment use, amongst other information);
- Wood preservative identification;
- Pallets number;
- Moisture content:
Maximum 18%

23 – SYNTHETIC PUTTY RECEIVAL FOR REPAIRS

The fabricators must meet the specifications and use instructions recommended by the manufacturer(s);

24 – FABRICATION PROCESS CONTROL – FPC²

In accord with EN 13986:2004 Standard.

24.1 FOR PLASTIFIED PLYWOOD PANELS

Paper to be used

<i>Grammage – g/m²</i>	
<i>Paper</i>	<i>Final *</i>
40	120 – 125
60	145 – 175
80	210 – 220

* After using phenolic resin

² Only for plywood panels certified with CE Marking conformity..

PRESS

- For bonding time: máx. 20 seconds
- For temperature: 125 to 130 °C
- For pressure: > 14 kgf/cm²
- For time in press: 5 to 7 minutes

24.2 FOR RESINATED PLYWOOD PANEL

PRENSS (for resin cure)

- For bonding time: máx. 20 seconds
- For temperature: 125 to 130 °C
- For pressure: > 14 kgf/cm²
- For time in press: 3 minutes

24.3 FOR DECORATIVE PLYWOOD PANEL

Observation: These parameters apply only to decorative veneer bonding (sliced veneer).

Glue application

- Moisture: In accord with item 5
- Veneer temperature: < 40 °C
- Grammage: 220 to 280 g/m²
- Distribution: Uniform

PRESS

- For bonding time: máx. 20 seconds
- For temperature: 125 to 130 °C
- For pressure: > 14 kgf/cm²
- For time in press: 3 minutes