


<b>BEST PRACTICES GUIDE</b> <b>Storage and handling of bundles &amp; panels</b>			
Storage, civil and building construction, load-bearing boards for flooring and scope of use		IT-10 Date: 22/01/10	Page: 1 of 10 Modification: 4
Issued by: Leire N.	Approved by: Jorge P.	Quality Department	Modification: 17/01/14

## 1. PURPOSE OF THE GUIDE

The information contained in this publication is aimed to inform customers about proper storage and handling of panels in order to obtain better final results or even a longer product-durability.


## 2. STORAGE

The importance of proper care and storage of plywood cannot be over-emphasized, thus all panels should be stored in a cool, dry place away from the direct sunlight. Drastic changes in temperature and humidity levels, as well as a lengthy exposure to direct sunlight, might produce internal wood tensions leading to cracking.



When outdoors-storage comes unavoidable, panels should be well covered with a waterproof packaging permeable to water steam, keeping them all on lifted stands so as to avoid contact with floor, vegetation or water.

It is recommended not to remove the packaging of the boards, and keep it on as long as possible before the panels are conditioned for use.

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## 2.1. STACK

When panels have to be raised, moved or stack, this should be done properly in order to avoid warping or any other possible deformation.




It is recommended to pile panels horizontally on a flat surface and level. Stack one on top of another should be done on wood battens, placed vertically over the beams below. Battens halfway between are not meant to exceed a distance of 600 mm. among them.

## 2.2. HANDLING

Panels must not be dragged by using rollers with sharp edges neither overchains, to prevent any damage or scratches on finished surfaces.



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Care should be taken when working with forklifts (it would be convenient to protect the forks) to prevent panels from being marked or damaged at the base of the package.




### 2.3. PREVENTIVE MEASURES

Once unpacked, bundles should not be moved thus panels may slip quite easily.

### 3. CIVIL & BUILDING CONSTRUCTION FORMWORK

Protect panels from a direct and long outdoors exposure.



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### 3.1. MECHANIZING AND DRILLING

Mechanizing the panels, it is highly important the use of convenient sharp tools, on a good support avoiding vibrations.

Saw circular discs have to be placed as low as possible to prevent chipping, denting and damage to panel edges.

Use appropriate bits, suitable for use on wood.




When cutting the panel, this should be leant on a right position and strongly pressed down against the cutting table and guide-rails to avoid vibrations.

Once the boards are cut, two coatings of water resistant paint for external exposure should be applied on the edges as soon as possible.

### 3.2. CARE AND HANDLING OF PLYWOOD FOR SHUTTERING

The Formwork finish quality and the number of reuses of a panel may vary depending on some factors linked to a proper care on the job site.

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### 3.2.1. TREATMENT BEFORE FIRST USE

Before using, it is of great importance a deep treatment/cleaning of panels with a formwork release agent, no matter what kind of coating they have. We advise to apply two coatings before the first use and one after each later application.

### 3.2.2. RELEASE AGENTS

The choice of a suitable release agent, according to the specific type of concrete and finishing required, will guarantee a cleaner result after stripping and a longer lasting panel. The quality of the release agent may affect the finish aspect of concrete. Plywood panels have to be treated with a quality release agent before each using.


### 3.2.3. CONDITIONING OF THE PANELS AND FORMWORK PROCESS

Holes for anchorages should be drilled through both sides and not just one of them. Also, do never drill the panels without placing a base underneath the panel to avoid chipping.

Holes and edges should be sealed with at least two coatings of waterproof paint. An appropriate silicone or putty would be recommended on boards junctions to minimize whitewash loss.

If the vibrator touches the panel, this could lead to one part of panel getting attached to concrete. To avoid this, it is convenient to protect the vibrator at any time with a rubber-stopper or design the wire-mesh in a way that the vibrator does not touch the panel at all.

It is of great importance to release the panels as soon as possible to prevent breakages or that these get attached to concrete. Ask concrete manufacturer for advice.

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### 3.2.4. FORMWORK FINISH

Due to the fact that panels usually get to working site at a low moisture content (below 15%), it is highly probable a rippling effect on veneers as a result of their first exposure to weather conditions on their first application. This might cause printed marks on concrete faces.



### 3.2.5. FORM PANELS STORAGE

Plywood panels should be cleaned and treated immediately with a proper release agent after stripping. Those form panels left without cleaning after use, are highly probable to be damaged when taken away from the shuttering. Boards should be storage with their film face protected from sun; by example by leaning them on a wall. If sun exposure becomes unavoidable, a quick loss of moisture of the face veneers would probably damage the phenolic film.

## 4. LOAD BEARING BOARDS IN FLOORS INSTALLATION

### 4.1. STORAGE

As plywood is manufactured with low moisture content, lower than those at work site conditions, it is a good practice to storage it for a period of at least 24 hours, under conditions closer that those experienced in service.

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### 4.2. MECHANIZING

Edges can be manufactured straight or mechanized.

Panels with straight edges need some space among them and all sides placed on wood battens.


Long side Tooth and groove panels do not need to be placed on an additional beam under the long side.

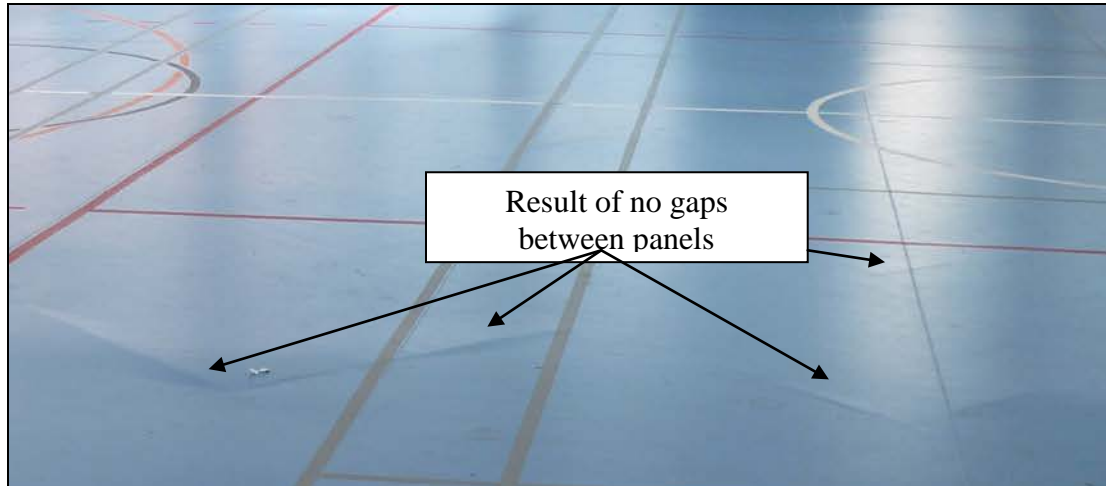
### 4.3. ENLARGEMENT SPACES

Bearing in mind moisture increase, it is highly recommended to leave a gap between panels according to panel length as it is pointed it out in the following chart.

Panels suffer changes in moisture content that affect its dimensions. Panels are manufactured with a content of 12 +/- 2%. In the graph below, a dimensional variation in length and thickness can be observed in connection with moisture.

	NOMINAL	INCREASE	MEASURE	INCREASE	MEASURE	INCREASE	MEASURE
MOISTURE	10%	15%		20%		25%	
Length	10	0,01	10,01	0,02	10,02	0,02	10,02
	500	0,38	500,38	0,75	500,75	1,13	501,13
	1.000	0,75	1.000,75	1,50	1.001,50	2,25	1.002,25
	1.500	1,13	1.501,13	2,25	1.502,25	3,38	1.503,38
	2.000	1,50	2.001,50	3,00	2.003,00	4,50	2.004,50
	2.500	1,88	2.501,88	3,75	2.503,75	5,63	2.505,63
	3.000	2,25	3.002,25	4,50	3.004,50	6,75	3.006,75
Thickness	9	0,14	9,14	0,27	9,27	0,41	9,41
	12	0,18	12,18	0,36	12,36	0,54	12,54
	15	0,23	15,23	0,45	15,45	0,68	15,68
	18	0,27	18,27	0,54	18,54	0,81	18,81
	24	0,36	24,36	0,72	24,72	1,08	25,08
	30	0,45	30,45	0,90	30,90	1,35	31,35

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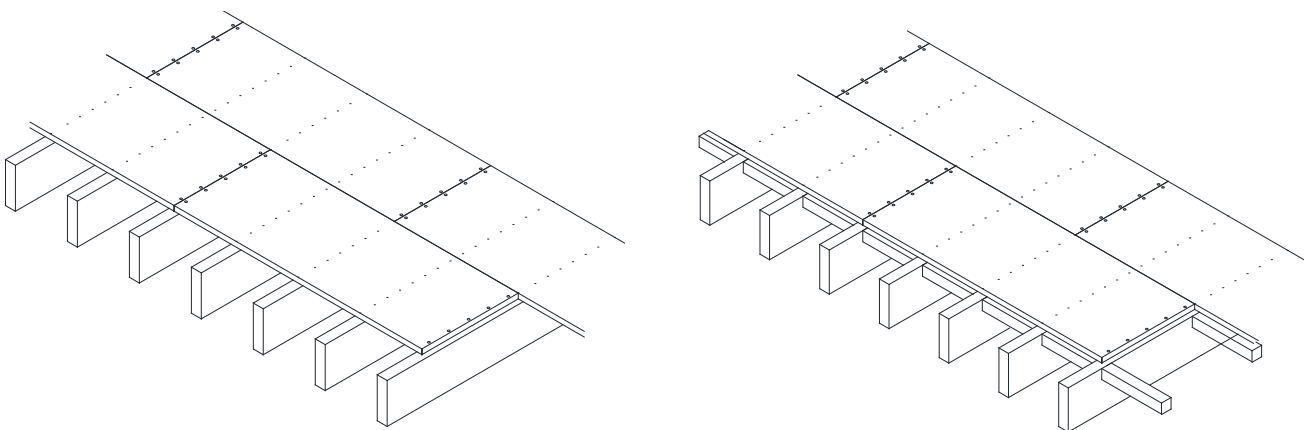
#### 4.4. ASSEMBLY OF PANELS

Panels with straight edges are recommended to be always leaned on their four sides, placing their short sides on small beams and the longer ones on crossbeams.


All panel edges are meant to lean on beams or crossbeams.

It is recommended that panels keep a minimum support base of 18 mm on beams or crossbeams.

Side joints on short sides should be placed alternate whatever the sort of edge.





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#### 4.5. PANELS INSTALLATION

Minimum length of nails or screws should be twice the panel thickness and their diameter at least 0.16 times panel thickness.

It is recommended to inlay nails or screws 2 or 3 mm. under the panel surface.  
In case of panels being used as floor coating, it is preferable not to seal inlay-holes.

Values below show minimum and maximum distances among settings in relation to edges.

Maximum distance settings (mm)		Minimum distance in relation to panel edge (mm)
Distances among settings along edges sides	Distances among settings upon beams, twin or upright intermediate support for panels	
150	300	8

#### 5. SCOPE AND OTHER CONSIDERATIONS TO BE TAKEN INTO ACCOUNT

Depending on the panel finishing, the intended use is as follows:

##### LAUDIO PLY PANELS

Uncoated boards.


Internal application in construction.  
EN 636-2 S

Interior and humid environment or protected outdoors as structural element.  
EN 13986

##### LAUDIO FORM PANELS

Phenol film coated and waterproof edges sealed with water resistant paint.

External use in construction as structural element.  
EN 636-2 S

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### LAUDIO CAR PANELS

One face non skid phenol film and smooth finish on the other.

External use as structural element above ground protected. Service 3.1.  
EN 335-1

The declaration of performance of all our products is available on our web page:

[www.maderasdellodio.com](http://www.maderasdellodio.com)

Check as well the following Norms:

- ENV 12872: “Wood panels - Guide for an application of structural panels with formworks, walls and roof-cover”
- EUROCODE 5: “Design of timber structures: Part 1 -1: General” .Common rules and rules for buildings.

For any further information, please do not hesitate to contact:

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Modification date	Modification done
14/06/13	New index. New reference for construction formworks. Recommendation according UNE ENV 12872:2000
17/01/14	New corporative image