

## SALES SPECIFICATIONS FOR THERMAL AND ACOUSTIC INSULATING PANELS

### Quality and Environment System Specification

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Amendment	Date	Amendment description
A	21/01/02	Complete review
B	25/11/02	PT. 4.4.1. The definition of "Bubbles" was added to the defects list P.to 4.4.2. "Bubbles" was added to the acceptability standards
C	18/12/08	Review of the whole sales specifications
D	16/03/10	References to the CE Marking in compliance to EN14509:2006 were added
E	28/10/15	References to the CE Marking in compliance to EN14509:2013 were added

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#### 1. PURPOSE AND FIELD OF APPLICATION

The purpose of these sales specifications is to describe the dimensional, aesthetic and functional characteristics and their tolerances of the panels manufactured by Pan Urania.

#### 2. GENERAL INFORMATION

Pan Urania makes discontinuous production of sandwich panels composed of 2 external coatings ( steel sheet, fiberglass etc..) and an insulating material (polyurethane foam, mineral wool, extruded polystyrene, expanded polystyrene, etc..) and other components for the panels junction ( profiles made of PVC, steel sheet, extruded polystyrene, wood, etc..)

**\* Any request from the customer regarding dimensions, type of coating, type of junction and insulating material has to be agreed between Pan Urania sales representative and the customer.**

### 3. CONSTRUCTION TECHNOLOGIES

The panels can be produced using 3 types of technologies (that can also be used together, at the same time) depending on the field of application and on the insulating material:

- **Foaming:** production of the panel through injection of the polyurethane foam inside the 2 external coatings (self adhesion of the rigid polyurethane foam).
- **Gluing:** production of the panel by gluing ( with polyurethane glue) the external coatings to the insulating material (mineral wool , extruded or expanded polystyrene).
- **Assembly:** production of the panel by an assembly process, the connection of the external coatings is made through a mechanical fixing (e.g. rivets), there is no anchoring between the coatings and the insulating material.

### 4. CHARACTERISTICS OF THE FINISHED PANELS (QUALITY STANDARDS)

The quality standards vary depending on the construction technologies described at point n° 3 of these sales specifications.

The panels produced by Pan Urania have not been tested for walking/stepping over them; in case of special needs our technicians will collect all necessary information (assembly system, materials used, panels use, etc..) to be able to manufacture panels suitable for the use requested by the customer. Pan Urania declines any liability in case of incorrect use of the panels (drilling, overloading, cut outs and all those operations that can affect the panel's integrity).

#### 4.1 Characteristics of the metal sheet coatings

If not otherwise agreed the following types of coatings are used:

TYPE OF COATING	DESIGNATION	REFERENCES
Pre-painted steel sheet	S 250 GD Z 100	UNI EN 13306:10 Maintenance – Maintenance terms and definitions
Galvanized steel sheet	S 250 GD Z 100	UNI EN 10169:12 Steel plain products coated by organic material (coated coils) – Technical conditions of supply  UNI EN 10346:15 Hot dip coated steel plain products for cold rolling – Technical conditions of supply  UNI EN 10143:06 Thin steel sheets and steel coils: tolerances
Plasticized steel sheet*	DX 51 D+Z100	UNI EN 10152:17 Cold rolled and electro-galvanized steel plain products, for cold rolling – Technical conditions of supply  UNI EN 10131:06 Cold rolled plain products, non-coated and electro-coated with zinc or with nickel, made of low-carbon content and with high yield point, for cold deep drawing and bending – Tolerances of dimensions and shape.

\*The normally used plasticized steel sheet is not suitable for external applications.

#### 4.2 Characteristics of the insulating materials

With reference to what has been mentioned at point 2- General information-, the materials used for the internal insulations are:

- Injected polyurethane foam;
- Polyurethane foam boards;
- Extruded polystyrene boards;
- Expanded polystyrene boards;
- Mineral wool boards/strips.
- Aluminium honey comb.

Because of the wide range of materials that can be used, upon request of the customer we will provide details about their characteristics (thermal conductivity coefficient  $\lambda$ , tensile strength, compression strength, average density), only after having determined the exact composition of the panel.

#### 4.3. Dimensional characteristics and tolerances

The dimensional characteristics of the panels are indicated in the drawing which is attached to the price offer.

Here below we give some parameters and definitions including approximate tolerances:

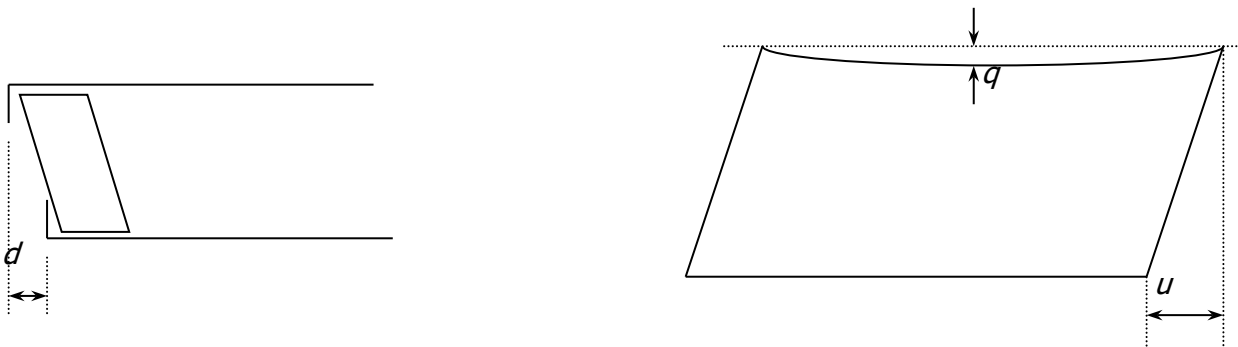
Misalignment of the coatings <sup>1</sup>	≤ 5 mm		
Perpendicularity of the coatings <sub>2</sub>	≤ 5 mm		
Coatings straightness <sup>3</sup>	Length > 2 meters: < 6 mm on a 2 meters length Length < 2 meters: < 0,3% of the actual length		
Normal planarity <sup>4</sup>	Coating width	Thickness < 0,7 mm	≤ 12 mm
	≥ 600 mm < 1200 mm	Thickness ≥ 0,7 < 1,2 mm	≤ 15 mm
Reduced planarity <sup>4</sup> (upon request)	Coating width	Thickness < 0,7 mm	≤ 5 mm
	≥ 600 mm < 1200 mm	Thickness ≥ 0,7 < 1,2 mm	≤ 6 mm

<sup>1</sup> The misalignment **d** of the coatings is the orthogonal projection of a coating on the coating of the opposite side.

<sup>2</sup> The perpendicularity **u** is the orthogonal projection of a transverse edge on a longitudinal edge. The deviation from the value **u**=0 is called off-square.

<sup>3</sup> The straightness **q** is the maximum distance from a longitudinal edge and the straight line that connects the 2 ends of the measurement base (it has to be measured on the concave side). The measurement base is a 2 meters distance taken from any point of the edge. In case of panels that are less than 2 meters long the measurement base must be the total length of the panel. The deviation from the value **q** = 0 is called "bending"

<sup>4</sup> The planarity tolerance is the maximum acceptable distance between the coating and the horizontal surface on which it is laid upon.



#### 4.4. Aesthetic characteristics

The visual check is carried out under favourable conditions for the tester (panels and steel sheets laid in horizontal position) who can also see those defects that are not considered sufficient to reject the product.

##### 4.4.1. Defects definition

**Scratches:** grooves of the paint or of the pvc coating that reveal the galvanized layer of the steel support.

**Clearly visible markings:** grooves of the paint or of the pvc coating that do not reveal the galvanized layer of the steel support and that are placed at more than 1 meter and less than 2 meters from the bottom part of the panel.

**Not clearly visible markings:** grooves of the paint or of the pvc coating that do not reveal the galvanized layer of the steel support and that are placed at less than 1 meter or more than 2 meters from the bottom part of the panel.

**Internal dents:** dents in the internal steel sheet.

**External dents:** dents in the external steel sheet.

**Bendings:** plastic deformation of the steel sheet.

**Paint defects:** spots of colour or strong colour alterations, cracks, bad adhesion of the paint or of the pvc coating.

**Bubbles:** convex areas without adhesion between the insulating material and the steel sheet coating.

#### 4.4.2. Acceptability criteria

CHARACTERISTICS		ACCEPTABILITY CRITERIA PER TYPE OF STEEL SHEET					
		Flat		Micro-ribbed		Embossed	
		Th. ≤5 mm	Th. >5 mm	Th. ≤5 mm	Th. >5 mm	Th. ≤5 mm	Th. >5 mm
Internal dents	Max dim. (mm)	100	50	60	30	60	30
	max n° per sqm	2	1	2	1	1	1
	% of acceptable defective pieces on total n° if ordered pieces (min. 1 pc.)	10	5	8	4	5	2
External dents	Max dim. (mm)	60	30	40	20	40	20
	max n° per sqm	2	1	2	1	1	1
	% of acceptable defective pieces on total n° if ordered pieces (min. 1 pc.)	10	5	8	4	5	2
Bendings	Max dim. (mm)	100	50	80	40	80	40
	max n° per sqm	2	1	2	1	1	1
	% of acceptable defective pieces on total n° if ordered pieces (min. 1 pc.)	10	5	8	4	5	2

#### 4.4.3. Paint retouching

Paint retouching of scratches, markings and paint defects (not affecting the characteristics of resistance to corrosion of the paint itself) are allowed for the following quantities of panels:

- Retouching on the external side of the panel: 1% of the total ordered quantity (1 panel for order for less than 100 pieces);
- Retouching on the internal side of the panel: 5% of the total ordered quantity (1 panel per order for less than 20 pieces).

The retouching will have to be carried out with a compatible paint and of the same colour of the defective steel sheet.

## 5. PRODUCTS CERTIFICATIONS

### 5.1. Fire reaction

Fire Reaction is the degree of participation of a combustible material to the fire it is exposed to.

### 5.2. Fire resistance

Fire Resistance is the ability to assess the fire behaviour of a material (e.g. a panel) over time.

### 5.3. Sound-absorbing power

The Sound-absorbing power is the ability of a material to reduce the effects of sound waves reflection. We can also say that sound-absorption is a property of the materials that turns the sound energy that hits them into heat.

### 5.4. Sound-insulating power

Sound insulation is the ability of a material to reduce the transmission of sound energy between the source and the affected environment.

### 5.5. Thermal transmittance

Thermal transmittance is the insulating power of the panel and it is mainly due to the insulating material used (if the int/ext. coating is made of steel sheet).

## 6. TYPE OF PACKING

All panels are stacked on wooden pallets, the panel in the bottom which is in contact with the wood is protected by a masonite sheet.

The panels edges are covered by cardboard or steel corner guards, then the package gets wrapped by stretch film, covered by a rain-proof cap and then again wrapped by stretch film.

Pan Urania grants the integrity of its products and packings for 3 months from the delivery if the storage is outdoor and for 12 months if the storage is indoor. To preserve the integrity of the products the customer is required to handle and stock them according to the storage instructions mentioned in these specifications.

### 6.1. Markings

All panels are marked with a stamp indicating the production batch.

### 6.2. CE marking

The panels that comply with the "CE marking" requirements according to the EN14509:2013 norm have the "CE" mark on every package. Moreover the declaration of conformity (DoP) and the detail of the "CE" marked products is indicated in the delivery document.

## 7. INSTRUCTIONS FOR A PROPER STORAGE AND USE

The goods supplied by Pan Urania should be preferably stored in sheltered places (the ideal storage conditions are indoor premises, with light ventilation, no dust and no humidity). If intact, the packing used by Pan Urania grants protection from water infiltrations.

In case that a storage in a sheltered place is not possible the packages will have to be stored far from areas with strong humidity, water stagnation and protected by wind gusts (to avoid damages/breakings of the packing). The storage in humid places with no ventilation can cause stagnation of condensation water in the internal elements which is particularly aggressive on metal, thus leading to oxidation (e.g. white rust for zinc).

Shims should be put under the pallets to grant some inclination (5% minimum) to allow water flow away and not let it stagnate on the package surface.

If the assembly of the panels is not done shortly after the delivery we suggest to cover the packages with protection tarpaulins. In this case it is necessary to ensure the water tightness and also a good air circulation to avoid condensation and water stagnation.

If panels have protection film on the steel sheet coatings, this will have to be completely removed during the assembly or, in any case, within 3 months from the delivery date.

In case the packing deteriorates it is necessary to unpack the whole pallet, remove the film from the steel sheet surfaces, dry the panels and, if it is not possible to store the panels indoor, protect them carefully with a tarpaulin to avoid water infiltrations and humidity.

To preserve the original performances of the product you have to follow the instructions mentioned in these specifications and in the packing-list attached to every package. All goods will have to be protected from direct solar radiation.

The pallets, unless special requests from the customers, are not stackable.

Pallets should not be placed in areas close to processing operations (such as metal cutting, grinding, sandblasting, painting, welding etc...). These operations should not be carried out close to already installed panels.

In case of cut outs on panels (for example for doors, windows, etc...) you have to carefully protect the panel that is being cut and the ones close by to avoid splinters from cutting or grinding deposit on the surface. If this happens you have to remove all residues to prevent from possible oxidation that could stain the panels surface.

## 8. PROVIDED DOCUMENTS

Panels are supplied with their CE declaration of conformity (DoP, when applicable) and the conformity of the batch ( if requested by the customer).

On each pallet a Packing List with the below information is attached:

- \* Consignee
- \* CE marking label (when applicable)
- \* Pallet N°
- \* Date of packing
- \* Packing scheme N°
- \* Quantity of panels
- \* Panels dimensions (Width x Length x Thickness)
- \* Panels type of coatings
- \* Order n°
- \* Item n° (given by the customer)
- \* Operator's signature

## 9. DISPOSAL OF THE PACKING AND PRODUCT END OF LIFE

### Packing

The packings normally used by Pan Urania are completely recyclable by separating the materials they are made of ( wooden pallet and stretch film).

### Product end of life

At their end of life the panels produced by Pan Urania generate waste materials that can be partially recycled. Removing the panels steel sheets these can be disposed as waste from steel processing (or, in some cases, aluminium) and they can be recycled.

The panels insulating material (expanded polyurethane, mineral wool, extruded or expanded polystyrene) has to be disposed in compliance to the laws of the country where the panels are installed and in some cases it can also be recycled as secondary raw material.