

## ACP ENGE BOLD - TECHNICAL DATA SHEET

ITEM	UNIT	SPECIFICATION
Thickness of ACP	mm	4
Color face aluminum thickness	mm	0.30
Backface aluminum thickness	mm	0.30
Variation of the thickness of aluminum	mm	±0.03
Weight	kg/m <sup>2</sup>	4,93
Length variation tolerance	mm	- 3 / +3
Width variation tolerance	mm	- 2 / +2
Thickness variation tolerance	mm	± 0.20
<b>Mechanical characteristics</b>		
coating flexibility		2T
Impact resistance	Kg/cm	50 – No peeling and cracks
Resistance to grinding	L/um	10,3
Resistance to pollutants	%	3,18
Resistance to scrubbing		No changes in up to 1000 scrubs
Resistance to acid	ΔE	1.48
Resistance to alkaline	ΔE	0.19
Bending force	Mpa	151
Elastic modulus for bending	Mpa	7x10 <sup>4</sup>
Penetration resistance	KN	8.65
Cutting force	Mpa	28
Stripping force	Mpa	164
Thermal expansion coefficient		1.28x10 <sup>-5</sup> °C <sup>-1</sup>
<b>Core</b>		
Compound core of recycled polyethylene	g/cm <sup>3</sup>	1.18
<b>Surface properties</b>		
Paint		PVDF(polyvinylide fluoride)
Paint thickness	μm	Minimum 25
Primer layer	μm	8
PVDF layer	μm	21
Color variation allowed		Δ ≤2.0
Cleaning processes before painting		Degreasing and Achromatization
Brightness	%	±10
Features of visible layer		70% KYNAR 500 and 30% primer
<b>Thermal properties</b>		
Temperature resistance	°C	From -50 to 95
Heat distortion temperature	°C	102°C
Fire Performance		C

## COMPOSITION AND GENERAL INFORMATION

### SPECIFICATION

Metal panel composed of two pre-painted aluminum blades attached to a core of low Density Polyethylene (LDPE), which confers lightness and malleability to the material. The union of strength and durability of aluminum with the malleability of the core gives the ACP ENGE BOLD versatility panel for different uses and applications.

To ensure the strength and final quality of the ACP panel, the correct specification for each use is fundamental, considering the following aspects and particularities:

#### 1) CORE

LDPE - Low Density Polyethylene, is obtained by polymerizing ethylene. The core, with its characteristics confer, acoustics, lightness, rigidity and flatness to the panels.

#### 2) ALUMINUM

Possible corrosion can occur in the base metal, so it is important to know the climatic conditions of the installation site of the panels for correct indication of the most thickness of the aluminum blades.

##### 2.1) Alloys and Tempera

BOLD works with 3000 family alloys. Due to its good conformability and corrosion resistance with slightly higher mechanical properties, particularly when deformed in cold, the alloy 3003 H14 is indicated for applications in normal climatic conditions (salinity-free and chemicals).

##### 2.2) Sizing of the blades

The resistance of a panel is determined by the applied loads, height of installation (wind load), support conditions and panel geometry. The thickness setting must meet the parameters set out in NBR 15446 - Sheet panels aluminum solids and aluminum composite panels used in architectural façades and cladding. Requirements:

Aluminium blade 0.5mm + 0.5mm

- ACP Thickness 4.0mm - ARQ buildings above 4 floors

Aluminium blade 0.3mm + 0.3mm

- ACP Thickness 4.0mm - ARQ buildings up to 3 floors

For special situations, where you want to use divergent thicknesses of these recommendations, it is recommended to do a dimensional tolerance study that takes taking into account the desired thickness, height of the building, incidence and wind speed, to determine the dimensions of necessary modules and reinforcements.

### 3) PAINTING

The pre-painting is obtained through the coil-coating system, which provides the surface of the aluminum a uniform finish, high strength and quality. Every color and aesthetic effect requires a specific finish, so the ACP ENGE BOLD has the following painting features:

#### 3.1) PVDF/KYNAR

The painting of the panels, are of type PVDF (Polyvinylide Fluoride) or also known as the Kynar 500 trade mark, is effective against external agents and indicated for external and internal uses. It is composed of polyvinylide fluoride and resin acrylic, which gives it resistance to weather, providing excellent resistance to ultraviolet rays, exceptional color retention and resistance to chemical degradations.

### 4) WARRANTY

BOLD guarantees that the supplied Composite Aluminum Panel follows all specifications mentioned in his data sheet, following the quality of the paint coating PVDF/Kynar, thus providing the warranty product according to the specifications table below, following the conditions of the warranty term.

Painting	Application	Warranty	Type
PVDF/Kynar	Internal/External Use	15 years	A or B

#### TYPE A

**Warranty with total replacement of the material** - when the product is used in a under normal atmospheric conditions, excluding corrosive or aggressive agents, such as chemical plants that eventually emit smoke or gases toxic and other aggressive substances, or high-corrosion saline environments, immersion permanent or continuous in water or other liquids. Application over distance greater than 1500m polluting sources and 3000m from the sea. Since the maintenance and cleaning of the façade accordance with the technical recommendations of the manual of use, maintenance and cleaning of BOLD Participações S/A.

## TYPE B

**Warranty with gradual replacement of the material** - when the product is used in a under atmospheric conditions with corrosive or aggressive agents, such as chemical plants that eventually emit toxic smoke or gases and other aggressive substances, or corrosive salinity environments, permanent or continuous immersion, water or other liquids. Application at a distance of less than 1500m from polluting sources and 3000m from the sea. Provided that the maintenance and cleaning of the façade takes place in accordance with recommendations of Bold Participações S/A manual of use, maintenance and cleaning. In this case, the replacement of the damaged material during the warranty period will take place taking into account the installation time of the product.

### 4.1) Coverage

The guarantee provided here in the areas of the following degradations and deterioration of the surface of the finished product:

- Delamination\* of the aluminum plates of the panel;
- Ripples greater than 0.5% in relation to d/f;
- Sizing outside the specified;
- Lack of flatness before installation;
- Loss of adhesion of the paint to the base metal;
- Appearance of bubbles in the organic coating;
- Appearance of fractures in the lining;
- Paint calcination with a numerical rating less than 8 (eight) when according to standard procedures specified by D4214-2015;
- Loss or color change greater than 8 (eight) Hunter unit ( $\Delta E$ ). The retention of color complies with ASTM G-155 standard and the degree of fading complies with the ASTM D-2244-15. The variation of  $\Delta E$  should be measured on a surface previously cleaned of dust and calcination, being compared with the measurement of an original panel (not exposed), retained as a reference pattern.

\*For the delamination aspect of the plates, there is no warranty from the manufacturer when there are cutouts or drilling on the panels, leaving the panels or parts with polyethylene edges exposed to the weather of the environment.

### 5) THE WARRANTY IS VALID WHEN:

- The installation of the panels has been carried out properly, in order to with the accumulation of water on the surface and ruff is completely zero;
- Panels installed vertically and do not exceed 86° degrees of vertical, when exposed to normal weather conditions;
- The polyethylene core is not exposed to time;

- The protective film is removed immediately after installation of the panels, in order to avoid dryness, extraction difficulties and other problems damage to the paint.
- Cleaning procedures are followed in accordance with the manufacturer's recommendations at least 01 (once) a year, applying water or specific cleaning products indicated by BOLD Participações S/A;
- It is not used for cleaning the chemical panels that contain acid in their formula, such as: solvents of the type watercolors, Solupan, concentrated detergents. These components may cause loss of (mattering) or irreversible damage to the paint;
- The panels have not been cleaned with abrasive sponges for removal of impurities;
- All recommendations in this term are followed for storage and handling of panels;
- There is no contact with aluminum with different materials, especially steel; if necessary, an insulator or anti-corrosion tape should be used in order to avoid erosive or electrolytic action;
- The removable film is removed from the folding parts before being sealed;

#### **6) THE WARRANTY DOES NOT APPLY WHEN:**

- When there is a change or alteration of the material or use and handling of inadequate of the panels during delivery, processing and installation;
- If during the term of the guarantee is not observed what is available in the installation and cleaning manual of BOLD Participações S/A;
- Continuous exposure of the panels at temperatures equal to or above 50°C (Fifty Degrees Celsius), and/or radioactive environments and/or atmosphere of high rate of abrasion or corrosion, especially buildings that are in saline or maritime environments;
- Damage to the painted surface due to the immediate removal of the film immediately after installation, causing marks or releasing waste from the glue on the panel;
- Damage or defect in the panel is caused by another reason other than composition of the material;
- If the substructure used is steel, which is highly corrosive and incompatible for use next to aluminum, is not properly painted or even insulated with anti-corrosion tape;
- The panels have been damaged by mechanical acts or exposed to the emission of toxic or polluting sources, in particular chemical installations using organic solvents and oil derivatives presenting acid vapors, alkaline products and aqueous residues from infiltrations;
- Found that the panels have been exposed to smoke, fire, and/or natural phenomena such as lightning, wind storms or sand, tornadoes, hail, or other events caused by nature, and/or damage caused by due to mechanical accidents or improper handling such as a fall of explosions, fires, etc.

- Improper storage, handling, manufacture and installation, such as inadequate reception structure, type of fixation not suitable for the profile failure of the application of sealants for sealing, panels installed with absence of fall and/or at an angle less than 05° (five degrees) in line horizontal, presented marks of retention and/or accumulation of water in the surface;
- Any form of damage, direct or indirect, caused by third parties and which may affect the quality of the coating, and/or deterioration or damage caused to the panel by acts of vandalism, impacts, misuse, abuse or negligence in cleaning or maintenance, and/or damage caused by any change in panels that alter their original characteristics and/or installations Initial.

## **7) PROPER USE AND MAINTENANCE**

### **7.1) Storage**

The maximum storage period should be up to 12 months, and to avoid deformation or bending of the panels, they must be stacked horizontally on pallets or some type of support with inclination around 05° (five degrees) for drainage purposes, and kept 15cm (fifteen cm) from the ground to allow ventilation.

All pre-painted material must be stored in a covered place, protected against moisture and condensation. Protections and closures with canvases or plastic films weather should not be completely closed in such a way as to allow for a adequate ventilation.

It is not recommended to store panels of different sizes in a the same stack, as the weight and corners of the smaller panels may mark and/or scratch the Larger.

### **7.2) Cleaning and maintenance**

In case of cleaning and maintenance, it is indicated to follow the following procedures:

- Wash the surface with water and neutral detergent;
- Rinse with clean water jet;
- Drying can be outdoors, with the aid of squeegee or fabrics that do not leave lint;
- For removal of silicone compounds and grease use isopropyl alcohol;
- Do not use watercolor solvents and acidic products that may cause bubbles and loss of brightness.

- Lavar a superfície com água e detergente neutro;
- Enxaguar com jato de água limpa;
- Secagem pode ser ao ar livre, com auxílio de rodo ou tecidos que não deixem fiapos;
- Para remoção de compostos de silicone e graxa utilizar álcool isopropílico;
- Não utilizar solventes do tipo aguarrás e produtos ácidos que podem causar bo.

## **8) POLICY OF COMPENSATION OR EXCHANGE OF DEFECTIVE PRODUCTS**

If all requirements are proven, BOLD Participações S/A will bear the only with the replacement of panels that fall within the conditions of the term of warranty. No extra costs will be included, such as: removal/reinstallation, materials, products and equipment necessary to carry out the activities, and transport expenses.

In the event of partial or complete replacement of the product, the amount of damage will be the ratio proportional to the time of installation of the product, and the amount of material to be replaced, or amount to be refunded, shall not exceed the unit price of the product.

## **9) NOTIFICATIONS**

To obtain the effective warranty, the owner must request the document within 30 days after installation for the warranty. The document will only be valid after the data and with the date and signature of BOLD Participações S/A. The warranty will have as its start date the date of issue of the invoice, and will be automatically canceled in the contrary to the warranty term delivered to the customer.

In addition, the terms of the warranty will only apply to products installed and stored properly. Any warranty-related claim must be claimed within 10 days of the defect and shall allow inspection of the defect to be product on site by the supplier. It was found that the problem was caused in the improper handling, processing or installation, the warranty is not valid.

## **10) CRITERIA AND DAMAGES**

BOLD Participações S/A merely re-resets the panels in accordance with the examinations carried out by professionals of the company, satisfactorily noting the existence of defect of the material.

Depending on the severity and extent of the problem, you can only choose compensation or replacement of the panel, not including any extra costs such as hand removal/reinstallation, as well as equipment and transportation expenses. Any and all claims by the buyer regarding defects observed in the product during the term of the warranty will only be met upon submission of the respective guarantee document, the sales tax document and the conduct of a technical survey of the product for the finding of the alleged defect. If at the time of the complaint the original product is no longer in manufacture, any replacements will be made by equivalent products.

Defects must be reported to BOLD Participações S/A within a period of 10 (dec) days from the date of the defect in the product, and must be done in writing and sending images, informing all the data necessary for traceability. The notified panels, if not installed, should be stored and stored in conditions until the technical analysis of the company. Any fact that impairs or creates new defects shall be deemed to be the responsibility of the buyer.

It is the exclusive option of BOLD Participações S/A to withdraw or modify its product lines and Colors. If the original color is no longer available, the replacement of the product will be equivalent to originally acquired.

Considering that each batch produced is unique and unique, there is no possibility of identical reproduction at different times - being subject to the difference of coloring/tint.

For this reason BOLD Participações S/A recommends that at the time of the purchase is increased by 3% (three percent) over the amount required, such as margin of safety to avoid any problems with colour/tint divergence, as well as exchange or replacement in any maintenance.

If you have any questions, please contact our Commercial department or Customer Service Consumer (SAC).

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