

Blistering in sandwich panels

Sandwich panels are a versatile and economical solution for cladding facades and roofs, especially in industrial construction. The panels consist of two metal claddings joined by a polyurethane core with thermal insulation properties. However, when the material is applied and subjected to sun exposure and high temperatures on the outer face, damage can occur to the surfaces, potentially leading to blistering.

Although the root cause of these blisters is still unknown, a significant number of variables may influence them, the main ones being:

- Color of the metal cladding of the panels: Dark and metallic colors favor higher temperatures, which will cause greater thermal differences and, consequently, physical and chemical changes in the product components and stresses exerted on the panel, which in the medium/long term can lead to delamination and deformation of the sheet;
- Application area with greater solar incidence and greater variations in ambient temperature, coupled with the major climate changes that the planet has been experiencing;
- Inadequate movement of the panels during the assembly process, causing bending movements and stresses that can lead to small internal ruptures between the sheet metal and the polyurethane.

The concealed facade panel is the most prone to this problem. Several studies have been conducted with thermal shock tests, which found that in the case of panels with concealed screws, the free flanges undergo repeated up-and-down movements during heating and cooling processes. The free movement of this flange applies repetitive stress to the polyurethane, which can cause it to detach from the metal sheet and consequently increase the formation of "bubbles" in this area (Figures 1 and 2).

Fig. 1: Example of the movements of the concealed facade flange during thermal shock tests

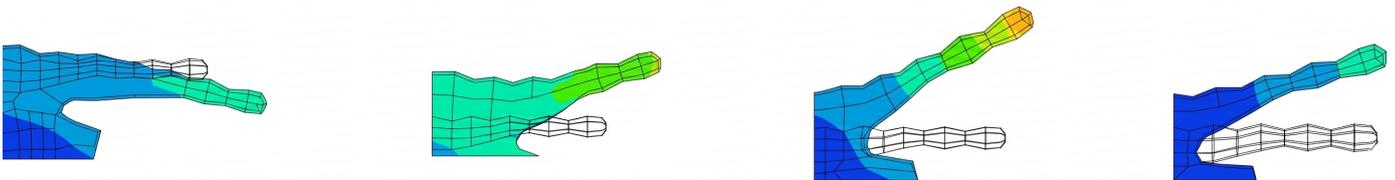


Fig. 2: Example of polyurethane rupture



This problem is purely aesthetic, not affecting the product's performance, either structurally or thermally, but we recognize that it can have an unpleasant visual effect.

O FELIZ Painel has a production process that controls the occurrence of this problem, adopting all existing market procedures and best practices. We comply with rigorous quality control in all phases of the manufacturing process (quality of raw materials, injection control, cooling, handling, etc.) and apply an adhesion promoter to the exterior metal coating to ensure perfect adhesion between it and the polyurethane. We continuously invest in improving our production process, constantly updating our processes and knowledge, in partnership with our chemical supplier, a globally recognized company in terms of quality.