

Composite profiles consist of two aluminium profile components which are thermally broken by a plastic bar made from polyamide 6.6. These profiles are generally suitable for coating and tested with respect to their resistance to temperature.

Unlike aluminium - the material intended for coating, the compulsory additional coating of the PA plastic bars in thermally broken profiles is not a reliable process.

With regard to the compulsory additional coating of PA plastic bars for thermally broken profiles, the following must be borne in mind:

- Adhesion to PA bars can be problematic in the electrostatic coating of composite profiles.

Reasons for this are:

1. The PA insulating bars are poor electrical conductors, i.e. there is no electrostatic charge potential between the coating material (powder or liquid paint) and the PA bar
2. The adhesion can also be negatively affected by physico-chemical properties of the PA bars (e.g. moisture content, smoothness/roughness of the PA surface, presence of separating agents/lubricants, temperature of the stoving conditions, selection of the coating system etc.)
3. No passive layer can naturally form on the plastic bars, for example. When the powder or liquid paint is stoving, such a connection between the base material and coating system is not assured. As the layer thickness increases, adhesion deteriorates. With fine-structure powder, there may be an increased risk of bubble formation.

When carrying out coating work using horizontal equipment, i.e. the profiles lie horizontally and are fixed to the transport carrier at both ends of the profile components, stress-free stacking must generally be ensured for insulating profiles. For stoving enamel systems (powder and liquid paints), the coating is thermally stoved at an object temperature of around 180°C for a specified period of time, depending on the coating system.

At this point, the temperature used and the manufacturing process cause stresses to be released within the bond between the aluminium and polyamide. If the profiles are fixed under stress, then these stresses will express themselves as distortions of the profiles such as torsion and/or profile offset – it may be that the profiles coated in this way can no longer be used. When stacking the profiles, it must be ensured that the fixing does not cause any stresses in the profile or lead to undesirable changes.

In general, the customer can finish the bars using liquid paints compatible with PA.

The following illustration shows a profile where bubbles have formed on the PA bars during coating with fine-structure powder.

