



CARLIER PLASTIQUES & COMPOSITES

The user's guide for GRP panels



CARLIER PLASTIQUES & COMPOSITES

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Introduction

This booklet is meant to help coachbuilders to find solutions to problems that can occur when using composite material panels in industrial bodywork.

As part of the contractual guaranty given by Carlier Plastiques, it is highly important to respect the instructions written in this document.

« Carlier Plastiques' » panels are compliant with the specifications of the standard NF-T-57-950-1.

We also recommend you to read part 3 of the standard « Installation guide for sandwich panels with fibre-reinforced composite material coatings with thermosetting matrix »

Summary

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2. Choice of panels and field of application, interior fitting
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4. Panels identification, inner and outer side
5. Transformation of the panels: cutting, machining.
6. Colour impregnated Gelcoat and protective film
7. Panel painting and installation of adhesive decorations
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1. General aspect of the panels

Due to the characteristics of the raw materials and the manufacturing process, the cosmetic finish of the inner or outer surface, may reflect traces of the moulds and core materials used during manufacturing. This will never affect the mechanical properties of the panel.

The irregularities in the appearance of the panels are acceptable within the limits defined in the latest version of NFT 57 950-1.

2. Choice of panels and field of application, interior fitting

2.1 Choice of panels, thickness and field of application

It is up to the customer to determine with precision the type of panel and the thickness he will need, according to different criteria such as the final use of the vehicle, the dimensions of the box...

In the case of temperature controlled vehicle, the type and thickness of panels must be determined according to and depending on the application conditions and the capacity of the refrigeration unit.

For horseboxes, it is **not** recommended to use a thickness lower than 12mm.

2.2 Interior fittings:

At the request of the customer, the body manufacturer can equip the panels with various elements on the inside:

- Protective rails made of metal or composite materials.
- Horizontal rails for load securing.
- Vertical rails for intermediate floors.
- Meat suspension systems in the roof.
- Evaporator installation on the front side or on the roof.

(This list is not exhaustive)

In any case, the bodybuilder must ensure that the type and thickness of the panels ordered and the equipment to be installed are compatible with the equipment to be installed.

It must be ensured that the fixation carried out by means of screws or rivets, coupled or not with adhesive, is done according with the state of the art and the specifications of the manufacturers of screws, rivets, adhesives and accessories.

The length of the screw or rivet must be carefully selected to avoid visible defects or bulges on the outside.

When fixing with screws in panels with plywood core, make sure that the length of the screw is perfectly adapted. The tip of the screw must not penetrate beyond the penultimate fold on the outside.

When fixing loading rails to the side walls, incorrect installation and/or use can lead to waves in the walls.

During installation, it is advisable to leave some slack for it to absorb the natural expansion of the plywood.

It is recommended to refer to the application recommendations of the accessory suppliers.

3. Handling and storage

3.1 Unloading and handling must be carried out with straps crane or vacuum lifters. Straps and suction cups must be in sufficient number and spacing to avoid deformation and/or breakage of the panels. A minimum of 5 straps or 5 suction cups is required for a semi-trailer panel. The straps must not be spaced at more than 2m apart. In the case of strap handling, protective angles must be placed on the edges between the straps and the panel(s). Using metallic chains is forbidden.

If you do not have cranes or vacuum cranes, we recommend the following installation:



In all cases of **handling** and storage, it is important to prevent the panels from being scratched by friction during operations.

When handling door panels or front panels, a forklift truck can be used, provided that the lower and upper surfaces of the packages are well protected and that the forks are equipped with protective "socks". Unprotected forks can damage the surface of the panels.

3.2. Panel storage should be made in a closed building, ventilated and not humid. Storage of panels outside is not permitted. If, however, you have no other option, you must limit this storage to one week and in this case every precaution should be taken to avoid the risk of water vapour or condensation and therefore moisture ingress.

The panels must be **stored** flat on a horizontal floor and the packages of panels placed on wedges, taking care not to damage the panel surface and spaced at a maximum distance of 1.5 m. Similarly, when stacking several packs of panels vertically, timbers should be placed so as not to create cantilever constraints.



When storing panels for a long period of time delivered with a protective adhesive film, it is recommended to remove the film no later than 3 weeks after delivery to avoid any change in colour.

4. Panels identification, inner and outer side:

The inner and outer faces are not identical in terms of aspect and therefore cannot be interchangeable.

To recognize the inner side, the panels are delivered with an **"INTERIOR SURFACE" label** such as below:



Plywood panels with a height of more than **2430 mm** have an extension piece fitted to achieve the required height and therefore are not symmetrical.

To have the extension piece at the top of the panel, the label below is fitted to indicate the top of the panel. It is therefore necessary to respect the mounting direction according to the **"TOP" label** placed on the panel.

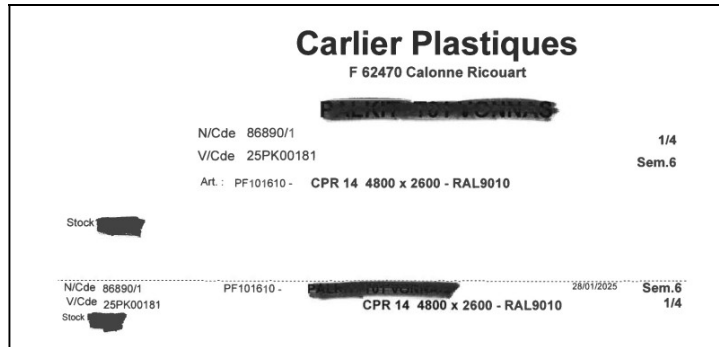


Each panel has an **order identification label**.





It is positioned so that the customer can identify the panel when it is placed flat. This label can be found on either the outside or inside face and on any angle of the panel.



When the panels are manufactured according to the customers' or to our drawings, these drawings are attached on the outside face of the panels.

If it is a drawing from the interior view of the vehicle, the drawing is glued face down to remind you that it is an interior view.

In case of doubt, please contact our sales department.

5. Transformation of the panels: cutting, machining.

It is necessary to use circular saw blades with properly sharpened tungsten carbide inserts. A prior verification of the condition of the blade is essential.

When cutting a recess or hole in the panel for windows, doors, extraction units etc. it is preferred that a carbide-tipped reciprocating saw blade is used.

In all cases, the operating instructions of the cutting tool manufacturers must be observed, particularly with regard to the number and spacing of teeth and rotation speeds.

When cutting doors, windows or any other type of openings, it is important to ensure that water does not penetrate into the panel.

If Captive profiles are used in the build of the body, the edges of the panel must be sealed to prevent any moisture from seeping inside the panels.

Isolated panels:

In the case of panels from the ISOLIT range (ISS or ISP), there is a risk of delamination if the panel is cut out. The risk is lowered significantly if the cut is made by clamping the panel to wooden supports at the area to be cut.

If the cut is to be done outside a wooden support please pay attention to the quality of the blade and the speed of the saw.





After cutting, check thoroughly the edges of the panel and in case of peeling repair immediately with resin or polyurethane glue.

Corundum Floor: saw teeth in the presence of corundum can generate sparks. It is preferable to use an individual vacuum cleaner, which should be emptied immediately, rather than a centralised vacuum system.

Heating Floor: do not cut into the panel as this may cut the heating fabric.

6. Colour impregnated Gelcoat and protective film.

On request, panels can be manufactured with a coloured gelcoat on the exterior surface.

Carlier Plastiques would like to draw your attention on the fact that a coloured gelcoat is not equivalent to paint in terms of appearance and durability. Carlier Plastiques and gelcoat suppliers do not guarantee the durability of the shades, especially darker shades.

This option also means taking the necessary precautions during unloading, storing and installations of the panels.

We can offer the option of applying a protective film on the outer side of the panel. This film will protect and helps to prevent damages on the exterior side of the panel during the mounting. We however recommend the following precautions.

- The use of vacuum or straps lifters is recommended (See paragraph 3 above Handling and storage). It is recommended to use the vacuum pad on the inside face of the panel/s if film protection is applied to the outside face of the panel.
- In case of extended storage (more than 3 weeks), the protective film should be removed to avoid any risk of moiré/ discolouration of the panel.

However, if this were to happen, the moderate use of an acetone solvent will help to clean the panel properly.

Despite all the care taken during the manufacturing process of the panels with coloured gelcoat, the final aspect will not reach the same aesthetic or quality of painted panels.

7. Panel painting and installation of adhesive decorations

- Painting process:

The panels can be painted with polyurethane paints after being cleaned and degreased properly. It is recommended not to sand the gelcoat's surface, a soft rub with a red Scotch-Brite™ abrasive hand pad is sufficient.

In order to obtain a high-quality final result, it is important to respect the specifications given by the paint(s) manufacturer.





Paint suppliers usually know well the precautions that should be taken for the painting process on GPR panels and can provide you with useful advice. Otherwise, the following process will give good results.

It is recommended to carry out the following operations when painting new panels:

- Dismantle and protect all obstructive accessories ;
- Gently rub the cell with an abrasive like Scotch-Brite® in order to break the shine without removing the gelcoat, and improve the undercoats' adhesion;
- Carefully dust with a microfiber cloth and degrease with a grease-remover that is compatible with the chosen paint system
- If necessary, apply polyester coating to the deformed areas using a spatula or sprayable product and rub down with a 320 grit abrasive; Dust carefully.
- Spray a primer compatible with the chosen paint to limit the risk of microporosity by respecting the recommendations of the primer supplier.
- Rub down the primer with a 320 grit abrasive;
- Dust carefully.
- Paint the cell to the desired colour with polyurethane (PU) lacquer. Follow the recommendations of the supplier for the paint range.

Metallic or darker paints are not recommended because they highly increase the heating of the panel's surface, Carlier Plastiques draws attention on the fact that there is a risk of cracks or blisters caused by heating of the panel under certain climatic or heat exposure conditions. We decline any responsibility for the appearance of such defects.

- Installation of adhesive decals :

It is necessary to always assure the compatibility between these adhesive decals and the composite panels supplied by Carlier Plastiques with the adhesive decal supplier. It is advisable to comply with its requirements for installation and durability.

The darker shades of such adhesive decals can lead to the same defects previously mentioned for dark paint shades.

8. Cleaning

Acids, basecoats and solvents can discolour gelcoats depending on the pigments used, the temperature and exposure time.

Clients must advise the users of vehicles with GRP panels to be careful to the pH level of diluted liquid used to wash the vehicles. An unsuitable pH will lead to rapid degradation of the panel surface. When washing with high pressure cleaners, excessive pressure or washing from too close of a distance will also lead to a degradation of the panel surface.

In general, the following instructions must be followed:

Maximum pressure: 80 bars





Minimum distance between sprayer and panel: 30 cm

Gentle soaps or basic detergents:

- pH lower than 10 with cold water (i.e. a temperature below 30°),
- pH below 9 if hot water is used (i.e. a temperature above 30°).

Acid solutions: pH higher than 2 and cold water.

In all cases, the temperature to which the panels are subjected must remain below 70 ° C to avoid any risk of cracks.

9. Repairing

In case of incident or accident on our GRP panels, it is often possible to repair it. This must be done as soon as possible as a wound on the panel's surface cause's humidity to penetrate the inside of the panel, which can alter the dimensional and mechanical characteristics.

Small scratches or cracks can easily be repaired.

For the repair process, we invite you to check our repair guide available on our website in the tab "FAQ/ Downloads" and on request to the norm NF T 57-950-3 (part 3) "Sandwich panels for industrial bodies and fixed cells; implementation guide."

We can also provide you with a repair kit upon request.

In case of doubt, Carlier Plastiques is at your entire disposition to advise you on the repair method.