

PALSUN® Polycarbonate Sheet & “Outgassing”

TECH BRIEF:
820 - TB
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Polycarbonate and many other plastic sheets are hygroscopic in nature, meaning that they absorb moisture over time. This moisture will inevitably attempt to “outgas” to the surface of the polycarbonate sheet. A distinction should be made between the release of water vapor and oxygen as in polycarbonate and the release of chemicals which is the more widely understood meaning of “outgassing”. When vinyl graphics are applied to the surface of the sheet they “capture” this moisture and oxygen under the graphic and the result is bubbling of the graphic.

Contact the manufacturer of the graphic material to confirm the material is suitable for use with polycarbonate. Always follow the manufacturer’s application instructions for hygroscopic materials. In order to prevent this issue from occurring the PALSUN polycarbonate sheet should be tested for moisture prior to applying graphics.

Testing polycarbonate for moisture:

1. Apply a 5" x 5" piece of material used for the graphic to a 6" x 6" sample sheet of the polycarbonate material in question.
2. Place the specimen in an oven at 150°F for 24 hours.
3. If bubbles appear under the film the polycarbonate is outgassing moisture.
4. If this occurs the polycarbonate sheets must be pre-dried in accordance to Palram Americas, Inc pre-drying requirements located in the PALSUN Fabrication guide.

Drying times will vary depending on the thickness of the sheet.

Typical Pre-Drying Time in Oven for Various Thicknesses*

Sheet Thickness		Drying Time at 260°F (125°C)
mm	Inch	Hours
1	0.04	1.5
2	0.08	4
3	0.12	7
4	0.15	12
5	0.2	18
6	0.24	26
8	0.32	45

Notes: Time for thicker sheets can be calculated through interpolation.

While keeping the sheets under plastic wrap is a good solution for protecting the sheet from dirt, it is not a solution for the retention of water in the sheet itself. Polycarbonate sheet begins absorbing water just after it is manufactured. The only demonstrated successful way to release all the water and oxygen in the sheet is to pre dry the sheet, which is of paramount importance when applying vinyl graphics without worry that the vinyl once applied will bubble up.

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