

PALIGHT® Foamed PVC

TECH BRIEF: 1324
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General Density Information

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Definition of Density: Generally, a material's density is defined as its mass per unit volume. It is, essentially, a measurement of how tightly matter is positioned together (ex: styrofoam vs. ceramic).

Density = mass (g) / volume (cm³)

A concept related to density is the specific gravity (or, more appropriately, relative density) of a material, which is the ratio of the material's density to the density of water. An object with a specific gravity of less than 1 will float in water; while a specific gravity greater than 1 means it will sink.

In some industries, it is a common practice to evaluate a foam PVC sheet based solely on its density. The assumption behind this rationale is that the more dense the material, the better the quality and therefore, more expensive the product. Palram supplies FPVC sheet for a variety of applications. Based on nearly 50 years of PVC manufacturing experience, we have found that density is of lesser importance than some of the other physical characteristics of FPVC sheet. Density is a 'result' of the combination of other physical properties and processing conditions which have been determined more critical for end use.

There are many different material properties in foam PVC. Listed below are some of the physical properties which have the largest impact on the end product application:

- **Surface Quality** – FPVC should be smooth, uniform, and consistent for direct (digital) printing and vinyl lamination.
- **Cell Structure** – Tightly contained, consistent, and small closed pockets of air for applications requiring cutting, and routing and exposed edges. No voids, will also impact the surface smoothness, by eliminating surface craters.
- **Color** – Consistent and stable color throughout the sheet for uniform printing.
- **Hardness** – Amount of surface hardness depends on application, die cutting, routing, high abuse applications.
- **Thickness** - Consistent / repeatable thickness throughout the sheet will generally aid in faster end user production efficiencies.
- **Flexural Strength (Rigidity)** - Depending on the application within the range of PVC, a high or lower Flex mod may be required.

All of the above can have a direct affect on the density of the end product.

There are many different chemical constituents within a foam PVC formulation. A few of these constituents are interchangeable based on the desired physical properties of the finished product. At the request of our customers, Palram Americas collected all of the different material properties and successfully optimized a full line of foam PVC products based on each market segment. We have compiled the specific requirements for each individual market and utilized formulations which will maximize end user production efficiencies and enhance this finished product with a quality piece. *Palram is continuously researching and developing new materials to help our customers gain the advantage in an ever-growing, competitive market place.*

Which PALIGHT Product is Right for You?

Palram is one of the world's largest producers of Free-Foam PVC Sheet products. The table below is provided to help you understand which Palight products are available and how they differ, so you can be sure you're choosing the right product for your application.

PALIGHT Family of Products

Application & Product Feature	Print, Graphics, and Display			Marine	Construction
	PALIGHT Premium	PALIGHT EPS	PALIGHT Outdoor	PALIGHT Marine	PALIGHT Timboard
Colors	Brightest White* & Array of Colors	White*	White*	White*	White*, Sand, and Clay
Protective Film	Palight (1-Sided) Palight DF (2-Sided) Palight NF (No Film)	Not Available	Not Available	Not Available	1-Sided
Weight, Density, and Rigidity	Very Good	Good	Very Good	Very Good	Very Good
Available Dimensions	Widest Variety	Limited	Variety	Limited	Variety
UV Protection	Acceptable <i>(applies to white only)</i>	Limited	Ideal	Limited	Ideal
Intended Use	High quality signs, graphics, displays, and exhibits. Provides the best all-around performance for digital and screen print applications, and display fabrication.	Economical Print Substrate (EPS). Great for lamination applications and cost-sensitive or short term use digital and screen print applications.	Signs and displays destined for long-term outdoor exposure. Available in smooth or wood grain finish.	Intended for marine or motor home applications. Seat backers, cabinet partitions, etc.	Used in home construction as a wood replacement for interior or exterior trim moulding. Sold in typical trim board / lumber dimensions, as well as, full size sheets.

**Each white color is specifically formulated per market segment.*