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MATERIALS PLASTIC SHEETS

One of the key elements of our process is the utilization of plastic sheets that are pre-colored and textured. Because the material is available in an unlimited combination of chemical composition, colors, gauges, and textures, we can offer a material for the most demanding applications.

PEI Stocked Materials

At PEI, we have developed a list of stock materials that the majority of our customers prefer to use for their enclosures. However, if your enclosure will require a type, color, thickness, or texture that is not one of our standard stock materials, we will gladly source whatever you need in the most economical quantities possible. For more information on this, please refer to our Special Order Materials Program by selecting the .PDF document on this page or going to the Documents web page.

Selection Criteria

The two issues that must be considered when selecting a material are the chemical composition and the physical attributes. For the chemical composition, this involves deciding whether you need an ABS, polycarbonate, polystyrene, or other type of material. For most of our customers, that decision is based on whether the enclosure will require UL certification, special environmental handling, or other types of consideration. Typically, our customers inform us of their requirements and we suggest a material best suited for their needs.

As for the physical attributes, the decision factors are broader and more discretionary on the part of the customer. By this, we refer to such attributes as color, texture, and even thickness as being attributes that can be selected based on the customer's preference rather than an absolute requirement. Again, the selection of the material's physical attributes is made with input from PEI as to price, availability, leadtime, and final product quality. This is particularly important when considering that for some special order materials, the leadtimes can run from 6 to 8 weeks...after color approval! As for cost, the primary factors are the material composition, the minimum quantities of sheets required, and the sheet manufacturer's setup charges. At PEI, we are always aware of these cost factors and whenever possible we suggest alternatives to higher priced materials, components, features, or methods.

Types of Plastic - Chemical Composition

While the plastics industry continues to develop and introduce an endless array of specialty materials, most enclosures built today, (regardless of the process used) are made with either ABS, polycarbonate, polystyrene, or a blended combination of these plastic materials. At PEI we have found ABS and polycarbonate blended materials work best for those applications requiring UL rating. For applications not requiring UL certification or where mechanical properties are not a factor, we usually recommend a general-purpose polystyrene which is about 1/3 the cost of those other blended materials.

Color

Both PEI and the sheet manufacturers maintain stock levels of various colors and thicknesses of materials. For PEI stock material, we assign no minimum purchase quantity based on material alone. However, we do have a minimum purchase order value which most customers do not have a difficult time meeting.

As for the material manufacturers, most have their own stock colors and textures that are available with little or no lead-time. However, based on the size of your enclosure and/or the order quantity, a minimum purchase may be required which is not cost effective. As such, you may find that selecting a

PEI stock material is your best bet. If you need additional information on color selection and availability, we will be happy to discuss your needs and provide sample colors or texture chips, accordingly.

Texture

For plastic sheets, texture refers to the surface that has been specifically controlled for appearance quality. While some suppliers state that both sides of their sheets are controlled, there is always one side that is primary and will be considered as the "textured" side.

Regarding textures, while there is a vast assortment of plastic industry standards available, most of them would be ill suited for enclosure applications. As such, PEI stocks and recommends either a suede or level haircell texture for most enclosure projects. While we occasionally have initial requests for other types of textures, by the time the final decision has to be made the customer has decided that there is potential risk (cost, leadtime, and market acceptance) with no benefit for selecting a non-standard texture.

As for selecting between suede and level haircell textures, the only absolute requirement involves whether the enclosure will be silkscreened or have some other surface treatment applied. The suede texture is a non-gloss finish that is smooth enough to silkscreen yet retains some level of texturing. An example of a suede texture is what you would find on most (non-iMac) desktop computers.

The level haircell texture has a deeper grain that is even more resistant to scratches and surface defects. Unfortunately, the depth of the grain makes it a poor candidate for silkscreening and we would never recommend using this texture regardless of the simplicity of the print or artwork.

Finally, when considering texture please keep in mind that most sheet manufacturers stock materials in a level haircell. This means that unless PEI has what you want in our inventory, you may have to consider a Special Order Materials purchase along with an extended leadtime. For more information on this, please call or e-mail us your request and we will provide whatever information you need to help make your decision.

Thickness/Gauge

Because we use extruded sheets of plastic, the thickness specified for each enclosure project will typically comply with one of the five basic dimensions that are common to our industry. Those thicknesses are (inches) .093, .125, .156, .187, and .250. Other thickness may be available and if needed can be specially ordered. However, as with most of the issues involving material selection, we have found that the majority of our customers are able to use the gauges listed here with no negative impact on their project or the product's performance. Again, if you believe you have a need for a non-standard thickness, please let us know and we will work with you in ensuring that the material used for your enclosure is appropriate and cost effective.

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