MELROSE

GRAPHIC OVERLAY
DESIGN GUIDE

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At Melrose, we have decades of experience manufacturing and delivering graphic overlays that meet the most demanding applications and requirements. In this design guide we will share our knowledge to create a valuable resource for anyone looking to develop their graphic overlay solution.

What are graphic overlays ?

A graphic overlay refers to the interface layer between a product and its end-user. It typically allows users to control and interact with a piece of equipment.

Graphic overlays are usually made of polycarbonate or polyester. They also include customized ink treatments, as well as an adhesive layer used for attaching the graphic overlay to the surface.

What are the advantages of graphic overlays?

Graphic overlays come with several benefits related to performance and aesthetics. Since they're made of strong and rugged materials with inks printed below the surface layer, graphic overlays provide excellent durability in some of the most challenging environments.

Graphic overlays offer a range of options for design and branding. Elements such as graphics, images, or proprietary colors can be incorporated into the overlays to ensure the parts accurately meet branding requirements for end customers.
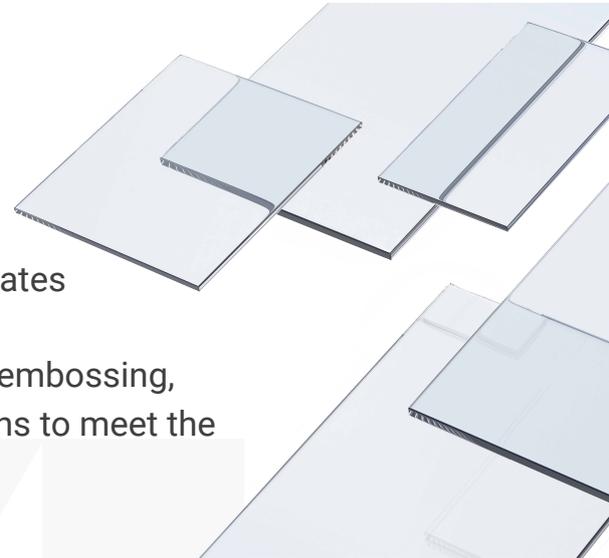
FAQ & Checklist:

Use the following set of questions to help guide your next graphic overlay project to ensure a successful result:

- In what type of environment will the overlays be used? Indoor, outdoor, direct sunlight, dusty, greasy, humid, cold or hot temperatures?

- Are there durability requirements including impact, abrasion, or chemical exposure?

- What will the overlays be adhered to? Plastic, metal, painted surface? Identify the bond surface to ensure the correct adhesive is selected.

- Are there any sealing requirements such as IP65 or NEMA4?

- Does the part require embossed buttons? If so, what is the expected actuation cycles during the life of the product?

- Will graphic overlays have requirements for LED features, back-lighting, or a display window? Have you identified areas of design requiring high opacity versus translucent features?

- Will overlay be subjected to extreme temperatures?

- Are there compliance requirements such as UL969, flame ratings, or environmental (RoHS/REACH)?

KEY CONSIDERATIONS FOR GRAPHIC OVERLAY DESIGN

1.Substrates Used for Graphic Overlays

The two most popular base substrates for manufacturing graphic overlays are **polyester** & **polycarbonate**. Both polyester and polycarbonate substrates provide excellent attributes and durability for a range of environments. Finishing options include die-cutting and embossing, as well as a range of other finishing and assembly options to meet the requirements of your application

2.Durability Requirements

The graphic overlay may have different durability requirements depending on the environment in which the application will be placed. This will determine the choice of its materials, but also for features and the overall look. For instance, a graphic overlay used in a harsh environment like a construction site might require more durable and rugged materials – as well as UV protection. A graphic overlay used in medical device applications will, on the other hand, have to remain intact when undergoing cleaning and/or sterilization.

At Melrose, we know how to engineer in solutions for your graphic overlay needs to reliably operate under any a range of conditions, including:

- Extreme heat or cold temperatures
- Exposure to humidity and moisture
- Exposure to dust, dirt, and debris
- Exposure to UV rays or chemicals.

3. Lenses and Gaskets

A graphic overlay might have specific requirements for an optical window or lens. Such requirements may include solutions such as lens materials, optically clear adhesives, and even films incorporating layers of conductive material. Properties like anti-reflective surfaces and impact resistance are carefully considered when working on display windows and lens applications.

Gasketing solutions on overlays are sometimes required to meet sealing and ingress requirements. A range of adhesives, foams, and sub-panel layers can be incorporated into the overlay stack to provide additional performance to meet different environmental factors.

4. Embossing

This method can improve the look and functionality of a graphic overlay by providing a more tactile and responsive experience to users. This might be a key requirement in some environments and impact the choice of material used for the graphic overlay.

5. Adhesive

Different surface materials require different bonding solutions. That's why it's essential to know the bonding surface to understand which adhesive will work best for the use case.
Here are a few traits that need to be considered here:

- Surface energy
- Metal or plastic material
- Smooth or textured surface
- Curved or flat shape
- Presence of powder coating
  (popular among painted housings)

6. The Overlay's Color, Size, Placement and Thickness

Does the application require a specific overlay size? Where will it be placed on the housing? If the overlay will be located within a cavity and needs to fit the housing perfectly, thickness and tolerances must be carefully considered.

If the graphic overlay needs to match a housing or some other critical color target, then this needs to be communicated early in the project to ensure processes and materials are aligned to the goal.

7. Finish

Graphic overlays can be provided in a variety of finishes. An overlay can be smooth or textured, matte or glossy, and even combine a variety of different finishes to accentuate specific design elements. The finish is important not only from the aesthetic perspective, but can also impact the graphic overlay's functionality.

Get high-quality graphic overlays from Melrose

We have decades of experience in manufacturing graphic overlays for globally recognized brands. We manufacture our overlays using materials such as polycarbonate (PC, Lexan), polyester (PET), acrylic (PMMA), and several other specialty films. Our experts use screen, digital, and offset printing to apply graphics of all kinds.

Get in touch with us !

Our specialists will work with you to understand your application, identify suitable materials, and provide services that will allow you to move from design to mass production.

contact us
www.melrose-nl.com