

plastic enclosure technology:

faster production time,
lower cost and
higher customization



Plastic Enclosure Technology: Faster Production Time, Lower Cost and Higher Customization

When it comes to enclosure technology, plastic is the most versatile and cost-effective solution on the market today. Plastic's advantage is that it requires no tooling; it provides low-cost, quick-turn changes during the product design stage; and it offers versatility with its plastic types which can be used in nearly any industry application.

In manufacturing, it's the efficient, flexible and quick-turn solutions that save precious time and money. Buckeye Shapeform's Plastic Enclosure Technology (PET) produces fully customized, professional quality cases that are built to suit various needs of manufacturers in the medical, military and aerospace, test instrumentation and telecommunications industries. Depending on the type of plastic used, these enclosures can be impact and chemical resistant. They can be FDA and USDA approved for use in food processing plants. Certain plastics can also be used to create bulletproof enclosures or flame retardant cases that can undergo extreme temperatures. PET satisfies all these industry needs and more while maintaining low costs, saving production time and offering easy customization.

A Faster Production Time

PET enables frequent, rapid and affordable changes during the product design stage—a plus in any product development initiative. Buckeye Shapeform's PET is an integrated

manufacturing process that produces quality plastic enclosures, built to manufacturers' unique product specifications. PET enclosures are durable and have the professional finished appearance of injected-molded parts, but provide more flexibility in real-world product design and development, which often requires numerous tweaks and changes before the product is ready for full-scale production. Buckeye Shapeform's PET manufacturing process is a low investment, quick-turn and aesthetic alternative to injection molding, thermoforming, vacuum forming and pressure forming.

Manufacturers benefit from plastic enclosures when they're looking to reduce weight; have an impact, chemical resistant and flame retardant product; or use a static resistant material that is USDA food approved.

A Low Cost Solution

With little to no tooling costs, plastic trumps metal. When manufacturers must refine their products midway through the design stage, it can be cost-prohibiting when using standard extruded aluminum or metal enclosures. Other times, manufacturers need small-run orders of enclosures and the required molds and traditional tooling is time-intensive and costly. Buckeye Shapeform's PET solves these issues. With PET, there is no tooling or molds to buy or build for special designs

and hole sizes. Therefore, the flexibility to change on-the-go is very fast. Buckeye Shapeform simply changes the programming and it's ready for fabrication.

PET also is a perfect solution for prototypes of an injection molded product. With PET, the customer can get the look and feel of the enclosure without the cost of an injection mold, which is sometimes as much as \$80,000. This kind of prototype is fitted with studs, standoffs and other fasteners as required, but it might not have the final rounded edges or molded-in standoffs that the final product will have.

Vast Customization Options

Buckeye Shapeform's PET allows for complete customization for any project and application. PET uses an extruded plastic sheet, which it cuts, bends and forms into a completely modified enclosure design. Buckeye Shapeform's engineers walk customers through this unique process with leading CAD software, custom 3-axis CNC routers and automated heat bending machines to produce configurations of virtually any kind to an extruded plastic sheet. Buckeye Shapeform's plastic enclosures can be customized with specially designed joints, edges, snaps and interlocks—elements which are programmed into Buckeye Shapeform's proprietary software and that can be easily reproduced for each product design. Manufacturers can build into their plastic enclosure designs tongue and groove joints; small and large radius bends; edge chambers, reveals and radii; snap joints and catches; hinges and interlocks; sliding panels; and label

recesses. PET allows for a highly versatile design and the finest customization while maintaining a quick and cost-effective development process.

Using a computer numerically controlled (CNC) machine, Buckeye Shapeform creates detailed, high precision plastic parts that are incorporated into a finished design to match the manufacturer's exact specifications. One size and style does not fit all. PET enclosures can be as simple as a two-piece design and as complex as having eight or more parts that are either pressed in place or adhesively located permanently.

With two-piece, snap together enclosures, there is no need for fasteners, which saves assembly time and the cost of hardware. By including grooves for PC boards, Buckeye Shapeform can eliminate mounting hardware and the associated costs. Manufacturers can also use a combination of PET and metal to improve mounting capabilities. Plastic enclosures can be mounted from inside or outside the case, including wall mounts, rack mounts and bench mounts.

Buckeye Shapeform finishes plastic enclosures with a matte texture for screening that uses a different type of screen ink than metal enclosures. This produces a high-quality feel and professional appearance. Most plastics can be painted and shielded but require a primer or bonding agent. Still many manufacturers find they enjoy the natural textured look and color of the plastic and forgo additional screening, painting and shielding.

Plastic Types for Every Application

Buckeye Shapeform offers a wide variety of plastic materials, all of which are RoHS compliant. PET can create completely customized plastic enclosures with wall thicknesses of 3mm, 6mm and 10mm for High Impact Polystyrene (HIPS); 0.06 inches and above for Polycarbonate and Acrylic; 0.125 inches and above for Kydex (PVC/Acrylic blend, FR94-V0); and all wall thicknesses +/- 10% for ABS, a fire retardant plastic used for most general purposes. Machining tolerances are +/- 0.01 inches. Angular tolerances are +/- 0.05 degrees.

ABS plastic fits many project needs. It is flame retardant with excellent impact resistance. ABS is used in many cosmetic parts due to its professional appearance. It allows for wall thicknesses of +/- 10%. ABS is also moderately strong and resistant to acids and bases.

High Impact Polystyrene (HIPS) is a low cost plastic that is easy to machine and fabricate. It's available in 3mm, 6mm and 10mm. It's often recommended for low strength applications where impact resistance, machining and low costs are required. HIPS is often used in pre-production prototypes because it has excellent dimensional stability and it is easy to fabricate, bend, paint and glue. HIPS is FDA compliant for use in food processing applications.

Polycarbonate surpasses other plastics with its supreme strength and light weight. Polycarbonate is nearly unbreakable. Bulletproof windows and enclosures inside banks or drive-throughs are often made of

polycarbonate. Polycarbonate is one-third the weight of acrylic and one-sixth the weight of glass; however, its unique qualities make it more expensive than both.

Acrylic has excellent resistance to weathering, chipping and scratching. UV lighting does very little damage to acrylic, leaving colors unchanged. However, acrylic allows 92% light transmission.

Kydex is a PVC acrylic blend that's cost competitive and offers excellent impact and solvent resistance. Kydex is available in 24 distinct grades, including recycled, mid-temperature, high-temperature, anti-static and conductive. It's easily machined and fabricated and available in multiple colors. Kydex is a high performance material that meets USDA standards for incidental food contact in meat and poultry plants. It is available in wall thicknesses of 0.125 inches and above.

To learn more about how Buckeye Shapeform products will work for you, visit our website at buckeyeshapeform.com, or call (614) 445-8433 or 1-877-728-0776 (toll free).

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