

Thermoforming vs. Injection Molding and Rotomolding

PROCESS

Thermoforming

- 3D aluminum form made to mold flat sheets or rolls of thermoplastic
- Heat applied to make rigid thermoplastic pliable and molded into 3D shapes
- Vacuum suction or pressure with suction are applied
- Finished form robotically trimmed
- Uncoated, or finished with paint, silk-screen, or specialty coatings

Injection Molding

- 3D, double-sided mold is made from steel, aluminum, or an alloy
- Uses thermoplastic pellets of various colors and materials
- Pellets heated to a liquid, then injected into the mold
- Finished with paint, silk-screen, printed, or specialty coatings

Rotomolding

- Uses thermoplastic in creating hollow parts
- Powdered resin is put into a hollow mold
- Mold rotated bi-directionally in an oven. Each axis arm may hold from 2-10 molds each process cycle
- Melted resin coats the inside of the mold, then cooled and de-molded

PART AND MOLD COST

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Injection Molding

- Higher upfront cost
- Individual parts with injection molding usually cost less

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Thermoforming

- As part size increases, thermoforming costs are less than injection molding
- Making a thermoforming tool with a single side is less expensive than a double-sided injection mold

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Rotomolding

- Upfront cost low compared to other plastic processes.
- Tooling prices depend on size/complexity of design

LEAD TIME

6-8 Weeks

Thermoforming
6-8 weeks for production tooling

12-16 Weeks

Injection Molding
12-16 weeks for production tooling

Rotomolding
6-8 weeks for production tooling

6-8 Weeks

BEST APPLICATION

- Large parts up to 96" x 144" x 40"
- Can combine various parts into one large part, assemblies
- Finish sheet comes color matched with many material options.

- Typical parts up to 3' x 3' x 3'
- Injection molding is the most common modern method of manufacturing plastic parts. It is ideal for producing high volumes of the same object.

- Strong, flexible, less-expensive parts
- Finishing and production options; can create complex geometries

Run Size: medium - large
Thermoforming

Run Size: large - extra large
Injection Molding

Run Size: small - medium
Rotomolding