Vacuum Forming

Whittney Chu, Nina Flores, Toya Rosuello

What is vacuum forming?

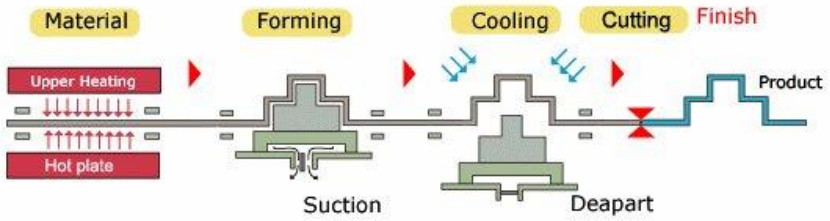
Vacuum forming is the process in which a sheet of plastic is heated and then pressed against a mold by a vacuum.

How does the process work?

1. A desired model is made from a material such as wood or foam

Sides of the model should be shaped at an angle for easy removal of plastic sheet later

2. A clamp frame is applied to hold down a plastic sheet
3. Heater heats up plastic sheet to make it moldable/malleable
4. Mold is lifted to the sheet from below
5. Vacuum is applied to eliminate trapped air and suck the plastic sheet into the mold (forming the shape of the mold)
6. Sheet is cooled and ejected from the frames
7. Excess material is removed and recycled



Video Demonstration

Demonstration of the vacuum forming process to create a plastic mask.

What is it useful for?

- Good for any type of mold, especially those composed of multiple smaller parts
- Helpful for prototypes and model parts

Typical Applications

For Industry:

- Packaging
- Machine Guards
- Electrical Enclosures
- Medical Devices
- Bath & Shower Trays
- Vehicle Parts
- Signage

On Campus:

- Architecture
- Design

What is it useful for (continued)?

Car parts

Packaging

What is it useful for (continued)?

Prototypes

Medical Equipment

What are the limitations?

- Plastic sheet must be relatively thin
- Defects/dirt on mold attaches onto plastic sheet
- Mold can not be too detailed
- Can be labor intensive and slow (only 1 at a time)
- Only thermoplastic materials acceptable

What are the potential problems?

- Main concern is plastic becomes weak. Can be result of:
  - Parts too close together
  - Plastic is overheated
  - Bubbles emerge from absorbed moisture

Where can you find it on campus?

- dFab
  B-level basement, Margaret Morrison
- artFab
  CFA

Who can access one?

Must be an Architecture major who has attended a training session

How much does it cost to use?

- Free if you are an architecture student
- Generally not expensive (cost of plastic sheet & energy to heat up)