

CAD/CAM - Pen Project

Plastics are a type of polymer. Made of very large molecules arranged in long chains of repeating links.

Thermosetting:

A group of polymers that once set in shape cannot be reformed.

- Harder to recycle
- Makes excellent insulators



Thermoforming:

A group of polymers that are able to be formed into different shapes over and over.

- more flexible
- easier to recycle
- can be formed into complex shapes



Source/Origin Polymers come from crude oil, gas and coal found beneath the Earth's surface.

Environmental impact:

Polymers are considered a **finite** resource. Some polymers are **biodegradable**.



Negatives:

- Not easily biodegradable
- cause air, visual and water pollution

Positives:

- Some can be recycled
- new technology developed to reduce and create non toxic **biopolymers**

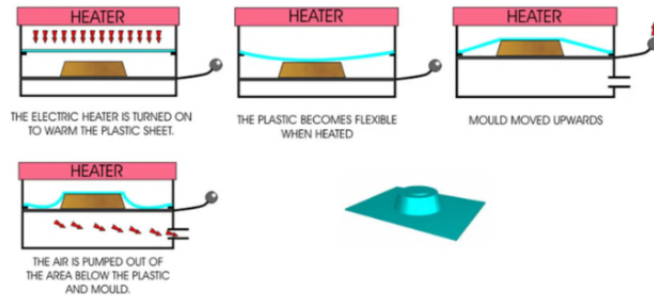
Finite- will run out eventually.

Biodegradable- can be broken down naturally.

Biopolymers- natural polymer

Vacuum Forming

A cost-effective manufacturing method that heats a thermoplastic sheet, stretches it over a mould and uses a vacuum to create precise 3D shapes.



Vacuum Forming Uses:

- Packaging
- Blister packs
- Food storage trays
- Hard hats
- Masks
- Shower trays
- Phone and tablet cases

Pros of Vacuum Forming

- Quick production time
- Highly efficient
- Low cost per unit, making it cost-effective for mass production
- Design flexibility
- Low tooling costs

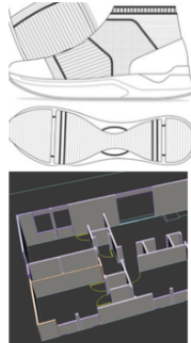
Automation

- Use of machines or computer systems to perform tasks automatically
- Requires little or no human control once set up
- Improves speed, accuracy, and efficiency
- Common in manufacturing, robotics, and smart systems



CAD- computer aided design

- uses computer software to create designs
- Produces accurate 2D drawings and 3D models
- Helps improve accuracy, speed and efficiency in the design process
- Examples include 2D design and Google sketch up



CAM- computer aided manufacturing

- Uses computer-controlled machines to make products from CAD designs
- Includes processes such as laser cutting, 3D printing.
- Improves production efficiency & accuracy
- Reduces human error and speeds up manufacturing



Careers using 2D design: Careers using 3D design:

- | | |
|--|---|
| • Graphic Designer- creates logos, posters, branding | • Product Designer- fashion, gadgets, tools |
| • Illustrator- produces drawings for books, advertising, games | • Architectural Designer |
| • Animator (2D) | • Interior Designer |
| • Print Designer- designs textiles, wallpapers. | • Set/Exhibition Designer- theatre sets |
| | • 3D Animator |
| | • CAD Technician-3D models for engineering |



No running



No eating



Aesthetics



Cost



Customer



Environment



Size



Safety



Function



Material