

Polymers

Plastics are one of the most widely used manmade materials. They can be easily shaped when heated and formed quickly to cool products with many desirable properties. Plastic is light, fairly strong, tough and durable. Plastic does not conduct electricity making it highly suitable for the casing of many electrical appliances.

Thermoforming Polymers

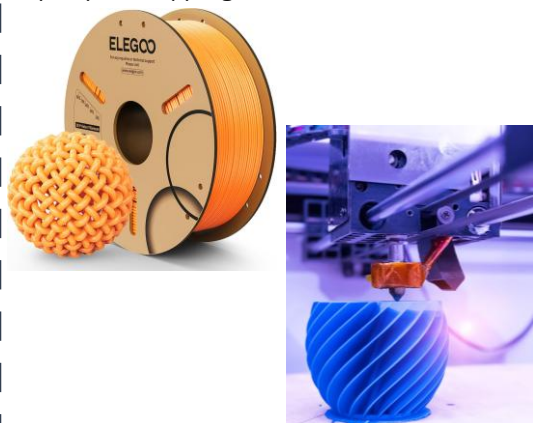
Thermoplastics / Thermoforming : Thermoplastics can be recycled and reshaped. They have an excellent surface finish and can be recycled. Common thermoplastics include acrylic, polystyrene and ABS.

Thermosetting Polymers

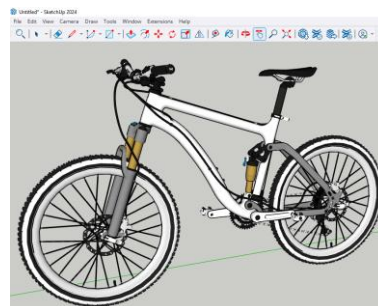
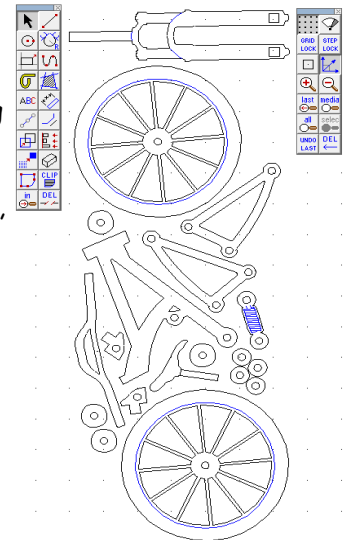
Thermoset plastics can only be shaped and heated once. They can be difficult to finish and cannot be recycled however they are more heat resistant making them ideal for high-heat applications. Common thermoset plastics include epoxy resin and urea formaldehyde.

Additive Manufacturing CAM

This process creates objects by building them layer by layer from digital designs. Unlike traditional manufacturing methods that involve cutting or moulding materials, additive manufacturing starts with raw material, usually plastic, and deposits it precisely where needed. This allows for **customised, complex shapes** that would be difficult to produce using conventional methods. It's widely used in industry to enable rapid prototyping.

**2D & 3D CAD (Computer-Aided Design)**

This is software that helps us to create accurate drawings & plans on a computer. Instead of drawing with pencils & rulers, we use a mouse & keyboard to make shapes, lines, & patterns on a screen, like drawing, but more precise. The designs are flat, showing height & width (not depth). With 2D Design we can change drawings, add measurements, & prepare it for CAM, to turn designs into objects.



3D CAD is software that helps people create detailed, three-dimensional models of objects on a computer, showing height, width, and depth. We use this to create 3D Printed files and then models.

Topic: Forming

Engineering

Exploring and manipulating polymers into different forms.

Polymers

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Thermoforming Polymers

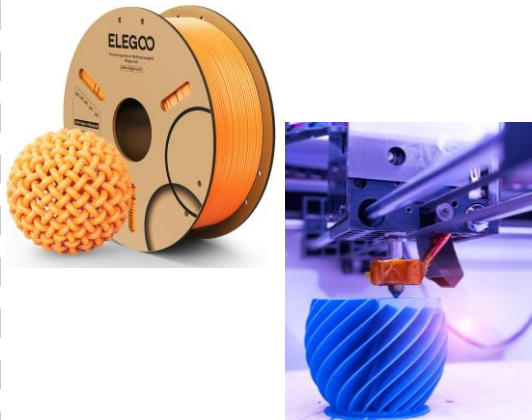
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Thermosetting Polymers

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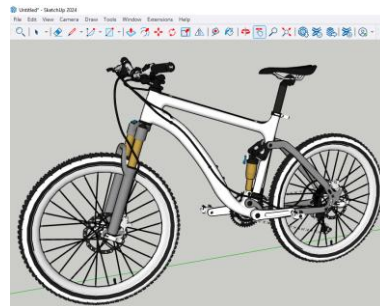
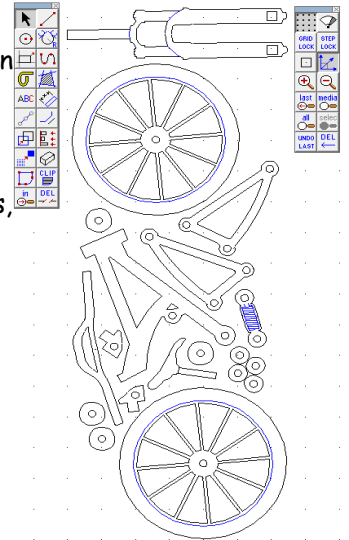
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2D & 3D CAD (Computer Aided Design)

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3D CAD is software that helps people create detailed, _____ - _____ models of objects on a _____, showing _____, _____, and _____. We use this to create 3D Printed files and then models.

SMART Materials

Name two SMART materials and state why we use them.

- 1 _____
- 2 _____

Smart material: processes

Explain the polymorph process, using full sentences with adjectives and connectives, the technique for carrying out the process.

1.



POLYMORPH GRANULES

2.



ADD HOT WATER

3.



GRANULES SLOWLY JOIN TOGETHER

4.



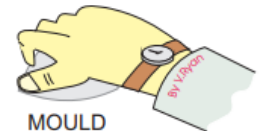
MASS OF POLYMORPH

5.



REMOVE POLYMORPH

6.



MOULD POLYMORPH GRANULES

Orthographic Projection



TOP

FRONT

RIGHT SIDE
