Sustainable Pouch Project

Polymers are a **finite** resource. This means that we have a limited amount and they will run out. Some of the pros and cons of polymers are shown below.

- Do not biodegrade easily so release harmful toxins in landfills.
- This causes air, visual and water pollution.
- Lots of energy to produce.

- Some are recyclable so they don't use new raw materials.
- New technology has created **biodegradable** ones. These are non toxic and renewable.

Suststainability	The impact of a process or product on the environment.
Sustainable	A process or material that can be used without causing permanent damage to the environment.
Finite	Will run out/ irreplacable (e.g. metal/ oil)
Non-finite	Won't run out/ replacable (e.g. timber)
Carbon footprint	Amount of greenhouse gas released into the atmosphere when making, using or disposing it.
Global Warming	Earth's temperature is rising causing damage to habitats and extinction.
Obsolete	No longer useful/ outdated.
Planned Obsolescence	When a product is designed to become outdated or useless quickly.

Reduce
Limit the material/ packaging/ pollution used to make products.

Reuse
To use a product again either for the same purpose or another.

Recycle
Breaking down and forming the material into a new product.

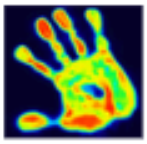
Rethink
Rethinking our decisions when making and buying products.

Refuse
Not buying products that are bad for the environment.

Repair
Fixing things instead of throwing away and **designing for maintenance.**

Smart Materials

react to external stimulus or input (heat, light, electricity, pressure and moisture) to alter its functional or aesthetic properties.



Thermochromic pigments change colour with heat. They are used for thermometers.

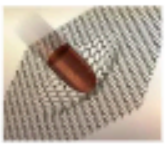
Photochromic pigments change colour with UV light. They are mostly used in transition lens sunglasses.

Modern Materials

Cornstarch Polymers (e.g. PLA and PHB) are biodegradable, non-toxic and recyclable. Used for food containers and 3D printing.

Flexible MDF has grooves along the length to make it pliable.

Titanium doesn't react with the body so is used in medicine and dentistry. It has a high strength to weight ratio and corrosion resistance.



Graphene is the thinest material discovered. It is strong, transparent, impermiable and conductive.

Nano materials are used to improve the size and conductivity of electronics. They can add water and UV resistance and to textiles.

Metal foam is porous and lightweight, yet it retains most of its properties.