

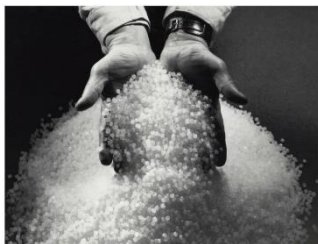
## Plastics – an introduction

### What are plastics?

Plastics are materials that can be moulded into required shapes by the application of heat and/or pressure.

Most plastics are derived from organic material, ie. substances made from things that once lived, including oil, cotton, sugar cane, coal and corn. There are however exceptions, such as silicone which is derived from sand.

At the point of processing, plastics consist of granules, pre-formed tablets, powders, syrups or pastes.



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Plastics have been traditionally classified as:

- Natural: a material that can be moulded in its natural form. Eg. [amber](#), [gutta percha](#), [horn](#), and [tortoiseshell](#).
- Semi-synthetic: made of a chemically altered natural material. Eg. [casein](#), [cellulosic plastics](#) and [rubber](#).
- Synthetic: entirely laboratory made. Eg. [phenol formaldehyde](#) and the many [poly-plastics](#).

Plastics are based on **polymers**, large molecules made up of a number of smaller units (**monomers**), joined together to create long chains in a process called **polymerisation**. They can be divided into two distinct groups:

- **Thermofforming** plastics are those which, once formed, can be easily heated, melted and remoulded. This means that they are easily processed and recycled.
- **Thermosetting** plastics are those which undergo a chemical change to become permanently hard and rigid. They cannot be reformed or remoulded so the recycling process for these plastics poses different challenges.

You can find out about some of the most commonly used plastics through our exhibition [Polymorphia](#) including: [polyethylene \(PE\)](#), [polystyrene \(PS\)](#), [polyvinyl chloride \(PVC\)](#), [polyester/polyethylene terephthalate \(PET\)](#), [polypropylene \(PP\)](#), [polymethyl methacrylate \(PMMA\)](#), and the formaldehydes; [urea \(UF\)](#), [phenol \(PF\)](#) and [melamine \(MF\)](#).