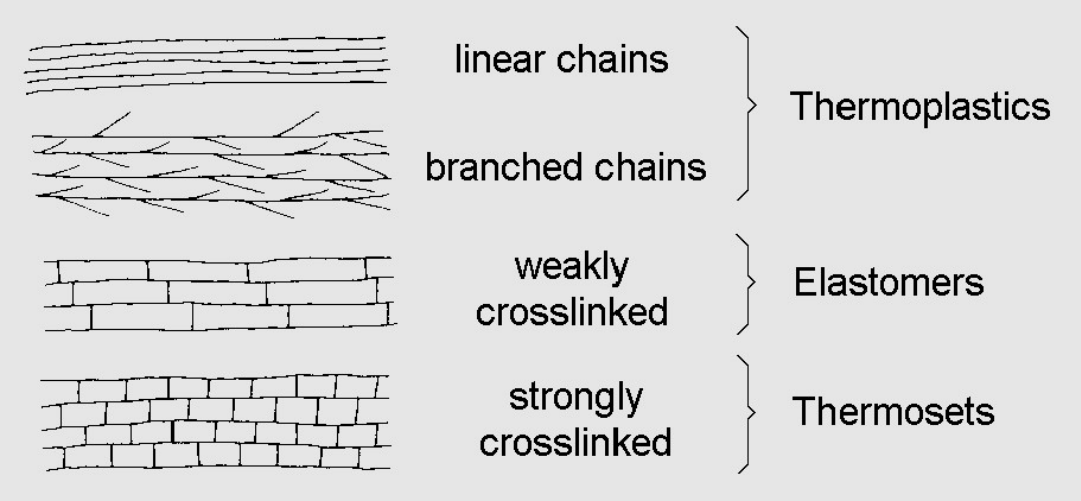
Thermoplastic Processing Introduction

What are Plastics?

Plastics are a large and varied group of materials, the overwhelming majority of which are derived from petroleum and consist of different combinations or formulations of carbon, oxygen, hydrogen, nitrogen and some other elements, like fluorine and chloride. They all share one essential characteristic: they are easy to form into whatever shape we desire. Most are what are known as thermoplastics, which means that they require heat to take on their definitive form. They start out life as a powder or as granules. Others, which take their definitive form when cold (through a chemical curing reaction), and do not soften when heated, are known as thermosets. These are usually in liquid or powder form as a raw material. There is also a third branch of the family called elastomers which can be greatly distorted before returning to their original shape.



How are plastics made?

The answer is in their technical name, polymers. 'Poly' in Greek means 'many', 'Mer' in Greek means 'part'. This element of the plastic in a single combination of molecules is called a 'monomer'. Each monomer is like a single link in a chain. When they are joined together, usually by using heat and/or pressure and sometimes a catalyst, they make long chains that form a material with a useful mixture of properties. All these chains now combine to form a 'Polymer', from the Greek words 'Poly' and 'Mer'.

The way the polymers are related defines to which class they belong:

Most plastics, at some stage of their existence, usually when processed, are liquid so they may be formed into various shapes, to form the end products. The shaping is usually done by using heat, pressure or a combination of the two. Thanks to the almost endless number of possible combinations, there are over fifty different, unique families of plastics in commercial use today and each family may have dozens of variations.

Processing Technologies

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Processing Application Introduction