

SOURCES, ORIGINS, POLYMERS

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SOURCES, ORIGINS, POLYMERS

1. CRUDE OIL

2. THE OIL REFINERY

3. BIO-POLYMERS

FOR INFORMATION ON A RANGE OF POLYMERS DOWNLOAD THE APPS: **MODERN_MATERIALS** and **MORE-POLYMERS1** from the Apps section of www.technologystudent.com

FINITE RESOURCE CRUDE OIL AND NATURAL GAS

Oil has a very important role in our lives and the plays an equally important role in industry and the world economy. Oil provides us with a range of essential fuels and materials, including polymers.

However, crude oil is a finite resource, and will eventually run out. Polymers from crude oil are often regarded as damaging to the environment. Consequently, environmentally friendly polymers are being developed, that are derived from plants.

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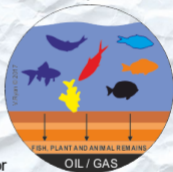


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WHERE DOES CRUDE OIL COME FROM?

Three to four hundred million years ago, marine plants, fish and animals died and their remains dropped to the bottom of the sea. Over time more remains built up and were covered by sand and silt. Over the following hundreds of millions of years, the compacting pressure from the build up of further sand and heat, transformed the fish, plant and animal remains into oil and natural gas.



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EXTRACTION OF CRUDE OIL



Generally, when an oil / gas well is drilled, the pressure of the oil trapped in the rock structure (reservoir), is enough to drive it to the well head. **Tap on the image** for more detail.

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PLASTICS, FUELS AND CHEMICALS FROM CRUDE OIL

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Oil refineries 'refine' oil in massive quantities, to produce the fuels we need. However, some of the raw materials we need to manufacture plastics, are also extracted from oil at the refinery. When crude oil is refined, four percent ends up as raw materials for the production of plastics

Oil is refined through a process called distillation. To the plastics industry, **Naphtha** is the most important fraction distilled from crude oil. It is used in the production of a range of plastics.

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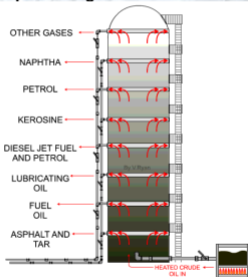


DISTILLATION

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The distillation process takes place at an oil refinery in a distillation 'Tower'. Crude oil is heated to over 370 degrees Celsius and it vaporises, rising up the tower, condensing at different levels. NAPHTHA is important to the plastics industry.

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POLYMERS FROM NAPHTHA

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Naphtha is used to manufacture a range of polymers / plastics.

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ENVIRONMENTALLY FRIENDLY POLYLACTIDE (PLA)

Polymers / plastics have a reputation of being environmentally unfriendly. They take years and in some cases centuries to decay.

However, plastic bags made from Polylactide (PLA) take only five years to decompose. Containers such as drinking bottles and food containers manufactured from PLA, take slightly longer to decay, as they are manufactured from thicker material.

Polylactide is referred to as a 'bioplastic' because of its environmentally friendly nature.

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for detailed
information**



**BIOPLASTICS
SYMBOL**

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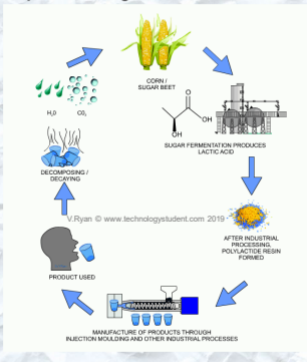
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LIFE CYCLE - POLYLACTIDE (PLA)

It is a sustainable, environmentally friendly polymer, due to it being derived from plants.

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BIOPOL BIODEGRADABLE PLASTIC

Biopol is a brand name for PHB (Polyhydroxybutyrate). An environmentally friendly, quality biodegradable plastic, produced through the fermentation of plant sugars and glucose, derived from sweet potatoes, pea starch, soya starch and vegetable oil. Biopol is a biopolymer, classified as a polyester and has similar properties to polypropylene (PP). Compostable, degrading harmlessly in soil.

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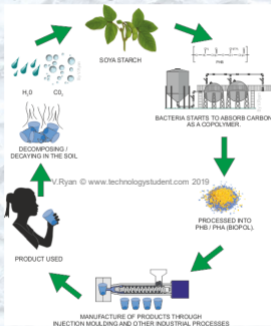
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BIOPOL BIODEGRADABLE PLASTIC

Biopol products can be land filled and they decompose producing water and carbon dioxide.

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BIOPLASTICS

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ON BIOPLASTICS



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