

Plastic: Reading

At the end of one holiday, driving through a flat rocky land of small shrubs and yellowing grasses, my friends and I decided to play a mock game of 'I-Spy'. After S for sky, and R for rocks I said: *I spy with my little eye something beginning with PB. PB?* My friends were flummoxed. Look carefully I told them, it's everywhere. Then they saw: PB in the trees, caught in the bushes, around the rocks and being blown about in the wind. Sometimes there were just small coloured pieces, sometimes whole pieces but certainly everywhere. Yes, the landscape was full of plastic bags.



It's not just the omnipresent plastic bag, plastic itself is now everywhere and in more places than you might imagine. Of all the different material in the world plastic is perhaps the one we take most for granted, you may even be wearing plastic and not realise it. Are you wearing contact lenses? Then you're wearing plastic. Is that shirt 100% cotton, that sweater 100% wool? Are they not 10% rayon, viscose or polyester? Have a close look at the label - you're probably wearing plastic. So what exactly is plastic, and where does it come from?

Plastics are polymers: long chains of atoms bonded to one another. They can be developed from natural materials, from chemically modified natural materials or from completely man-made molecules. Plastic bags are usually manufactured from polyethylene resin pellets made from ethylene gas, a by-product of oil. They were first introduced in 1977 and now account for 80% of the shopping bags handed out in grocery stores in the US. Each year, an estimated 500 billion to 1 trillion plastic bags are consumed worldwide - that's a million a minute. Most of it ends up as litter; only 0.5% of polythene bags are recycled in the UK and only between 1 - 3% in the US.

However polyethylene, or more commonly polythene, used for plastic bags is just one of many plastics used. The plastic used for adhesive tape, shower curtains and some clothing is PVC. It can also be a hard plastic, and over 50% of PVC is used in construction because it's so cheap and easy to assemble. The gramophone records that were popular before CDs came along are often called vinyl records because they are made from PVC: Polyvinyl chloride. The disposal of PVC causes problems because if burned it releases toxic fumes and if land filled it releases additives which can threaten groundwater supplies. PVC cannot be recycled to the same quality and most is 'downcycled' to make inferior products such as garden furniture.

Nylon was first used commercially in 1938 for nylon-bristled toothbrushes. It was intended to be a synthetic replacement for silk and it became more famous when it was used for nylon stockings in 1940. Women preferred them to silk stockings because they were just as attractive but lasted longer and dried more quickly. Despite their popularity nylon stockings soon became scarce because all available nylon was needed during the Second World War, this time to replace silk parachutes. Nylon can be found in many things including fabrics and carpets, guitar strings and fishing lines, while solid nylon is used for mechanical parts and engineering material.

While nylon was intended to replace silk it is thought that celluloid was created in 1856 to replace ivory in items such as billiard balls. Celluloid became famous as the first flexible photographic film used for still photography and motion pictures which is why 'movies' are sometimes called 'films'. Apart from making table tennis balls it's no longer widely used.

In the kitchen you'll find Formica on the tables, Teflon on non-stick frying pans and perhaps acrylic paint on the walls. Bowls, bottles, containers, and cutlery - it's all made from different kinds of plastic.

Meanwhile the landscape is covered in plastic bags. In South Africa the plastic blossom is known as the 'national flower', in Ireland it's called the 'national flag'. Tanzania's Director of Environment said the bags were an eyesore. So these countries, and others, have decided enough is enough. In South Africa the bags are now made more durable and therefore more expensive, and therefore reused rather than thrown away. In 2002 Ireland imposed a plastic bag tax, known as PlasTax, which in the first year reduced consumption by 90% and resulted in approximately 1 billion fewer bags being consumed annually. The tax also raised almost \$10,000 for an environmental fund. Tanzania, along with Zanzibar, has now banned flimsy plastic bags and anyone caught importing or selling a bag thinner than 30 microns could face six months in jail or a \$2,000 fine. The ban is also a result of the damage the bags do to animals and marine life. Thousands of sea turtles, for example, die every year from eating discarded plastic bags mistaken for food. To them the bags look like tasty jellyfish.

So plastic is the good, the bad and the ugly. It's practical and cheap - but we might end up counting the cost later.