



History of Plastics



John Hyatt & Alexander Parkes

Every day, plastics contribute to our health, safety and peace of mind. The first man-made plastic was unveiled in London in 1862 – an organic material derived from cellulose.

In 1907 the first completely synthetic man-made substance was discovered when Baekeland developed a liquid resin (**named Bakelite**) that hardened and took the shape of its mould. It doesn't burn, melt or dissolve in any commonly available acid or solvent and was the first thermoset plastic. Numerous products were manufactured based on this new material for weaponry in World War II that steel could not match.

Rayon and Cellophane: In 1891 Rayon was first developed following a search for a way to produce man-made silk. Cellophane was discovered in 1900 by Brandenberger who came upon the idea for a clear, protective, packaging layer, which he marketed in 1913, and which allowed for a clear layer of flexible, waterproof packaging.

Nylon: The 1920s witnessed a "plastics craze" as the use of cellophane spread globally. Nylon was developed and replaced animal hair in toothbrushes, with nylon stockings being unveiled in 1939. The structural nature of plastics was recognised and built upon by substituting and inserting elements into the chemical chain, developing new materials. The 1940s saw the use of nylon, acrylic, neoprene, polyethylene and many more polymers take the place of natural material supplies.

PVC, Saran™, and Teflon®: Another important plastic innovation of the time was the development of polyvinyl chloride (PVC), an inexpensive material, durable, fire-resistant and easily moulded. Vinyl found a special place as an upholstery material. In 1933 polyvinylidene chloride was accidentally discovered and was first used to protect military

equipment, but it was later discovered that it was great for food packaging. Saran™ would cling to almost any material and became the perfect tool for maintaining the freshness of food. In 1938 Teflon® was discovered – unique because it is impervious to acids in addition to both cold and heat – it is best-known for its slipperiness.

Polyethylene: In 1933, polyethylene was discovered and was commercialised in 1936 to have an enormous impact on the world. Polyethylene played a key supporting role during World War II. Its rise in popularity has been unprecedented to become the world's largest volume plastic. High density polyethylene was manufactured in 1951 and followed later in 1951 by Polypropylene and in 1978 by Linear Low Density Polyethylene.

Polystyrene, polyurethane and PET: In 1839 Polystyrene was discovered, but was only made practical in 1938. In 1954 Styrofoam, the trademarked form of polystyrene foam insulation, was invented. In 1937 Polyurethanes were discovered and patented, whilst in 1941 Polyethylene Terephthalate, or PET, was produced followed in 1942 by unsaturated Polyester. In 1970 other thermoplastic polyesters included Dacron, Mylar and Melinex.

Velcro®: In 1957 the birth of Velcro® occurred. The product was devised using nylon and could be spun in any required thickness, would not rot, mould or naturally degrade.

Plastics in Modern Life: Since the 1950s, plastics have grown into a major industry that affects all of our lives – from providing improved packaging to giving us new textiles, to permitting the production of wondrous new products and cutting edge technologies. Since 1976 plastic has been the most used material in the world. ♻️

(Courtesy of: American Chemistry Council)