

## INTRODUCTION

Ostromislensky of the Naugatuck chemical company first introduced polystyrene via a pioneering parent in 1925. At about the same time, work by I.C. Farbenindustrie began that resulted in the commercialization of polystyrene in Europe. The Dow Chemical Company also began development of the polystyrene product and process in 1930.

The commercial production of polystyrene first took place at about the same time in Germany and the US during the early 1930's; it was manufactured primarily for its good electrical properties. The polymer was produced in the UK at about the time of the beginning of the Second World War, when it was used not only as an electrical insulant but also as a glass replacement in optical instruments after lenses and prisms were no longer available from Germany.

The major stimulus to the production of styrene monomer came in 1942 in the US with the large-scale installation of manufacturing facilities for the styrene-butadiene rubber, which was required to replace natural rubber after the cessation of suppliers from the Far East. After the war when natural rubber became available again, there was a large surplus production for styrene monomer, and polystyrene became available to help meet the demand for materials, which could be used to satisfy the shortage of consumer goods. The polymer has good mouldability, high transparency and rigidity, which made it suitable for wide range of applications.

Crystal polystyrene was the initial polystyrene produced was a homopolymer. It is also known as general-purpose polystyrene and exhibits exceptional clarity with heat resistance above that of other commodity thermoplastics. A further development was rubber modified or impact polystyrene. Impact polystyrene is opaque and exhibits increased toughness and ease of processing versus other commodity thermoplastics.

Another major type of polystyrene application is expandable polystyrene, which is used mainly in lightweight insulating applications.

Polystyrene has many advantages, which include:

Lightweight: reduces transport fuel consumption and the cost of distributing products.

Performance: provides insulation and protection from contamination and impact.

Economy: usually less expensive than alternative materials resulting in savings to the consumer.

Energy Savings: polystyrene manufacture requires less energy than alternatives resulting in lower "greenhouse" emissions. As insulation, polystyrene foam enable enormous energy savings in commercial installations such as cool stores.

The annual consumption of polystyrene in US comprises of 8% of the total plastics used in the United States, making it one of the most often used types of polymers.