

## Leo Baekeland

**POLYOXYBENZYL METHYLENGLYCOLANHYDRIDE, BETTER** known by its easily pronounceable trade name “Bakelite,” is the stuff of great significance and great misinformation in the world. It is named for its inventor, Belgian chemist Leo Baekeland.

Before the industrial revolution, and even in its early years, most products were made from natural materials: leather, bone, ivory, wood, metal, plant fibers, animal hair, etc. The only materials similar to plastics were also natural in origin. Think of latex from rubber trees or shellac from the lac beetle. As human industry began to produce more and more, these natural sources became a bottleneck in production.

One of the earliest artificial plastics was celluloid, a highly flammable material that had the added disadvantages of being expensive and difficult to produce. In the early years of the 20th century, the time was ripe for a replacement.

Born in 1863 in Ghent, Belgium, just a few months after Henry Ford, Baekeland came from a modest background—his mother was a maid and his father repaired shoes.

Baekeland attended the University of Ghent thanks to a scholarship. There, he studied chemistry. By the age of 21, he was Dr. Baekeland and a professor.

Baekeland’s first experiments had to do with developing photographs. After a visit to the United States in 1889, he was persuaded to relocate here. Before a decade had passed, he had invented and sold a new type of photographic paper called Velox. Under the terms of its sale to Kodak, Baekeland also agreed to do no further photographic research for 20 years, and he set about to study plastics.

Baekeland was interested in perfecting earlier experiments with phenolic resins, which had failed to produce a useable material. The difficulty was that in order to create a phenolic resin, extremely high temperatures were

required, but those same high temperatures caused the mix to foam up. Upon cooling, the result was porous and fragile.

Around 1907, Baekeland discovered the secret to success, performing the last step of the process under pressure, which prevented the foaming. He produced an egg-shaped chamber he dubbed the “Bakelizer” to heat the mixture to 300 degrees Fahrenheit while preventing the creation of bubbles. The resulting plastic was hard, could not be melted, and was insoluble. He was granted a patent for the process in 1909.

Bakelite was the right product for the times as the automotive, aviation, and electronic industries were all on the rise and all needed a material like Bakelite. Distributor caps, electrical connections, knobs, and even entire car bodies, such as the Trabant, have been made from phenolic resins impregnated with fiber—materials based on Baekeland’s original. Colorful Catalin, developed upon the expiration of Baekeland’s patents in the 1920s, was used to create many consumer goods in the 1930s and ‘40s, and is a hot collectible even today.

Bakelite itself, usually black or brown to hide the fibers inside, is still produced by the Union Carbide Company. It remains heavily used whenever a moldable, easily machined, electrically inert, heat-resistant material is required. 

