



Heartland Science



Ohio's Legacy of Discovery & Innovation

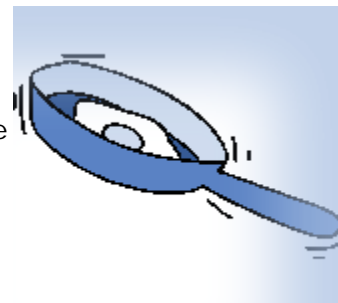


Materials

From Pottery to Plastics

Teflon

Roy J. Plunkett (1910-1994), a native of New Carlisle and graduate of The Ohio State University (M.S., 1933; Ph.D., 1936), accidentally discovered the stick-resistant surface coating that became known as Teflon while doing research on refrigerants at the DuPont Company.



On April 6, 1938, at DuPont's Jackson Laboratory in New Jersey, Plunkett pumped freon gas into a cylinder which was left in cold storage overnight. Surprisingly, the gas had dissipated into a solid white powder. Rather than toss out the "mistake," Plunkett and his assistant decided to test the material. They found it had two interesting properties: it was very slippery, and it did not react with most chemicals. Because of both of these properties, the material would eventually revolutionize many processes, most notably cooking and cleanup.

Tetrafluoroethylene was both stick- and heat-resistant, leading to practical uses in products ranging from cookware to space suits. It was marketed for the first time as DuPont Teflon® in 1945. Molecularly speaking, Teflon is huge. The molecular weight of Teflon can exceed 30,000,000 atomic mass units. It is one of the largest molecules known to man. The surface of Teflon is so incredibly smooth that it quickly became the surface of choice for cooking pans.



After discovering Teflon® at the age of 27, Plunkett went on to a full career, working at DuPont for several decades on teams that developed myriad fluorochemical products and processes that have positively impacted the electronics, plastics, and aerospace industries, as well as many others.

Did You Know?

- Teflon® was first used by the U.S. military in artillery shell fuses and in the production of nuclear material for the Manhattan Project.
- Plunkett graduated with a B.A. in chemistry from Manchester College in Indiana in 1932. He earned his master's in 1933 and his Ph.D. in 1936, both from The Ohio State University.
- The molecular weight of a substance tells how many grams are in one mole of that substance. The mole is the standard method in chemistry for communicating how much of a substance is present. One mole is defined as 6.02×10^{23} atoms or molecules of any substance. The atomic mass units (amu) of all the atoms in a given formula is the molecular weight. An amu is defined 1/12 the weight of the carbon-12 isotope. The symbol amu is referred to as u (a lower case letter u). Carbon-12 weighs exactly 12 amu.

Find out more...

- [Dupont History - Roy Plunkett](http://heritage.dupont.com/touchpoints/tp_1938/depth.shtml)
(http://heritage.dupont.com/touchpoints/tp_1938/depth.shtml)
- [Teflon®](http://www.teflon.com)
(www.teflon.com)
- [American Plastics Council: History of Plastics](http://www.americanplasticscouncil.org/s_apc/sec.asp?TRACKID=&SID=6&VID=86&CID=310&DID=920)
(www.americanplasticscouncil.org/s_apc/sec.asp?TRACKID=&SID=6&VID=86&CID=310&DID=920)