What's That Stuff? Silly Putty

Ann Thayer

Earlier this year, an announcement came across the news wires that Silly Putty is celebrating its 50th year. An image immediately came to mind, and I can see it as clearly today as I could in person 35 years ago: That hard, dark brown spot in the old burgundy-colored carpeting on the floor of the basement playroom. I'm positive it was Silly Putty.

In this year of Silly Putty celebration, the manufacturer probably doesn't like my broadcasting that its product--a ball of pinkish, bouncy, and stretchy material--is what became embedded in my parent's carpeting. Even though I don't remember being punished for inflicting the putty on the rug, the memory brings with it a pang of guilt. But I'm also suspicious that my older brother disavows any knowledge, or even recollection, of the spot in the rug.

Silly Putty was a welcome, almost necessary, companion to the Sunday comics. After kneading the pliable ball, you could smash it down on the newspaper page and then lift it off with the comics' mirror image on the putty. Careful stretching could then alter the features of any comic strip character. This process was repeated over and over again to great amusement.

But what was that stuff that remained embedded in the rug until my early teens, when my parents finally exchanged the old carpet for a more practical "indoor/outdoor" flooring selection? It turns out that Silly Putty is a silicone-based polymer. Its unusual features are known to anyone who has ever handled the stuff.

It stretches without breaking, but can be "snapped off" cleanly. It bounces higher than a rubber ball, with a
rebound of 80%. If you hit it with a hammer, it keeps its shape, but pushing it with light, even pressure flattens it easily. The manufacturer--Binney & Smith of Easton, Pa.--likes to call Silly Putty a "real solid liquid."

In more technical terms, Silly Putty is a dilatant compound, which means it has an inverse thixotropy—that is, as a viscous suspension or gel, it becomes solid under the influence of pressure. Another chemical dictionary tells me that the term "dilatancy" is used in rheology to "identify the flow property of certain suspensions in which the resistance to flow increases at a greater rate than the increase in the rate of flow." The material, Binney & Smith says, has "been the subject of dissertations by aspiring physicists and chemists."

The first Silly Putty was made by mixing silicone oil with boric acid. The formula and manufacturing process have remained essentially unchanged for 50 years—except for added colorants to make the newer bright, glow-in-the-dark, temperature-changeable, or 50th-anniversary gold putty. More than 4,500 tons, or 300 million eggs, have been sold since 1950.

James Wright, a researcher at General Electric's New Haven, Conn., laboratory, discovered the material in 1943 in an attempt to make synthetic rubber during World War II. A practical use for the putty couldn't be found, so it was finally sold as a novelty item in 1949 in a local toy store. Despite selling well, the store dropped it after that first year. The next year, Peter Hodgson, $12,000 in debt, borrowed another $147 for a batch, packaged 1-oz lumps in plastic eggs, chose the name, and launched Silly Putty. The classic pink putty has always sold for about $1.00 per egg, although today's eggs contain just 13.3 g, or less than 0.5 oz.

Hodgson managed to sign up only a few large outlets. In August 1950, New Yorker magazine, intrigued by the putty, published a story in its "Talk of the Town" section, and Hodgson received more than 250,000 orders in three days. By 1955, the market inverted from initial sales largely as an adult novelty item to being sold primarily as a children's toy. According to Binney & Smith, in 1957 Hodgson created one of the first television ad campaigns targeting children.

By the 1960s, Silly Putty was becoming popular worldwide and was sold in Russia and Europe. It even went to the moon with the Apollo 8 astronauts, in sterling silver eggs, reportedly to alleviate boredom and to help fasten down tools in zero gravity.

Hodgson died in 1976, leaving an estate of $140 million. Binney & Smith acquired the product in 1977. According to the company, a resurgence of interest pushed annual sales to 2 million eggs per year in 1987; today, it's closer to 6 million eggs, or about 90 tons, per year.

Silly Putty also has become part of the collection at the Smithsonian Institution's National Museum of American History. A vintage blue-and-yellow egg from the early 1950s is on display in the museum's "Material World" exhibition devoted to significant inventions and materials that have shaped American culture.

"The Silly Putty collection tells many fascinating stories about how this unusual product became an American phenomenon," said John A. Fleckner, chief archivist at the museum, when it was added to the museum's collection. "We are interested in this collection because Silly Putty is a case study of invention, business and entrepreneurship, and longevity."

Silly Putty is touted as a grip enhancer, used, Binney & Smith says, by athletes to increase hand strength. The company adds that it is recommended by many therapists as a stress reliever. But Silly Putty no longer lives up to my expectations for its primary function. It seems that changes in printing inks and processes—not, as many believe, in the putty—have limited its ability to pick up newspaper images.
A C&EN colleague phoned me when he learned I was writing this story. He told me that his six-year-old daughter recently returned from a birthday celebration with a putty party favor, bringing back childhood recollections on his part. In an ironic twist, after being played with for several days--I think as much, if not more, by the father as by his kids--the putty was eventually found embedded in the family-room carpeting.

I informed my coworker that, although much too late for my parents or me and that old rug, Binney & Smith does provide directions at http://www.crayola.com for removing Silly Putty from carpeting. If he doesn't manage to get it out, I hope he saves this article for his young daughter so that when she is old enough to read, she'll know what that stuff was that first amused and then so aggravated her father.

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