

## Interview Log: Charles “Chuck” Cline

### Time Code Content

- 00:00:02 **Introduction.** Charles “Chuck” Cline, chemist. Interviewed June 3, 2017, at the Roslyn Hotel, Roslyn, New York. Interviewed by Whitney Pape, librarian.
- 00:00:31 **Career:** Graduated in 1963 with a degree in chemistry and started his career researching titanium dioxide pigments for the paper industry. Interested in bookbinding applications, he moved from the National Lead Company to the National Starch and Chemical Company in 1970 as a development chemist working on emulsion and hot melt adhesives, eventually PUR, polyurethane adhesive. Involved with Bookbinding Manufacturing Institute starting in 1984. Traveled to local bookbinders to solve problems and develop new products for the industry. In 1989, he developed PUR adhesive for commercial printing. Nordson corporation developed applying system for bookbinding use of PUR adhesive and sold 14 units to bookbinders. In 1995 a second generation PUR was developed that reduced curing time from 24 hours to 4 hours. In 1998 a third generation PUR was developed that cured too quickly and caused problems with the applying equipment. In 2000, the fourth generation PUR was developed and is still in use in the bookbinding business today. 50 binders used PUR in 2000, now 200 binders use PUR.
- 00:06:56 **Business:** Many of the current users are small scale binding machines used for Print on Demand applications and On Demand Binding. Small runs of less than 100 books are increasingly popular.
- 00:10:20 Cline describes Teflon- or plasma-coated storage of the adhesive in smaller glue pots with rounded corners. Applied via wheel system or a slot extrusion system.
- 00:14:30 Cline describes low temperature hot melt adhesive as 100 degrees cooler running temperature than traditional hot melt glues, so warms up to working temperature faster and less chance of burns for people working with it.
- 00:16:44 **Career:** Retired in 2001 and started his own company, Binding Solutions, LLC. Travels throughout country to brainstorm problems with PUR use, also tests books for manufacturing quality.
- 00:17:32 **Coworkers:** Worked with Werner Rebsamen in mid 1990s on PUR development for bookbinding applications and solutions to the "insidious ink" problem. Worked with Jack Bendror to develop an adhesive with easier clean-up.
- 00:19:16 **Interest in Industry:** Bookbinding industry was a less mature industry than the other industries served by his company, relatively low sales--\$6-7 million--for his company. He saw the opportunity to make a large impact on the industry and increase sales to bookbinders. Impressed with the new problems and new opportunities offered by the bookbinding industry.

- 00:20:21 **Interesting Projects:** Developed hot melt glue for case-making for publishing industry, works with newer polyester cover materials. Currently in use in Europe, but hasn't been adopted in U. S. yet. Cost of equipment and materials a barrier.
- 00:24:42 **Mentors:** Werner Rebsamen and Tom Flanagan, chemist and Chuck's boss at National Starch and Chemical Company.
- 00:25:47 **Goals:** He was always trying to increase the sales of National Starch and Chemical Company (now Henkel Corporation). He was trying to sell products to the bookbinding industry and he was trying to help identify and solve problems, e.g. warped book covers.
- 00:27:53 **Regrets:** None, really. Had the opportunity to go into sales and make more money, but he preferred the type of work he was doing. Would have liked to be a professional baseball player.
- 00:28:43 **Greatest Accomplishment:** The development of PUR for bookbinding and the cooler temperature hot melt glue. Holds two patents, one for removing sulfur trioxide pollution from the emissions of the National Lead Company, and one for a water-resistant starch to protect paper bag contents while working and National Starch and Chemical.
- 00:32:14 **Changes to Industry:** Consolidation has meant more red tape for vendors.
- 00:33:24 **Interesting Projects:** PUR, low temperature hot melt adhesive, and hot melt adhesive for case-making.
- 00:34:36 **Changes to Industry:** Companies are much larger and consolidated. There are also many more small printer-binders instead of the operations being undertaken by different companies.
- 00:35:51 **Advice to Next Generation:** There will always be books being produced. Book production is increasing and work that had been outsourced to China is coming back to the U. S.
- 00:38:27 **End of interview.**